



# INCLUSIVE AND EDUCATIONAL SPACES FOR CHILDREN WITH AUTISM



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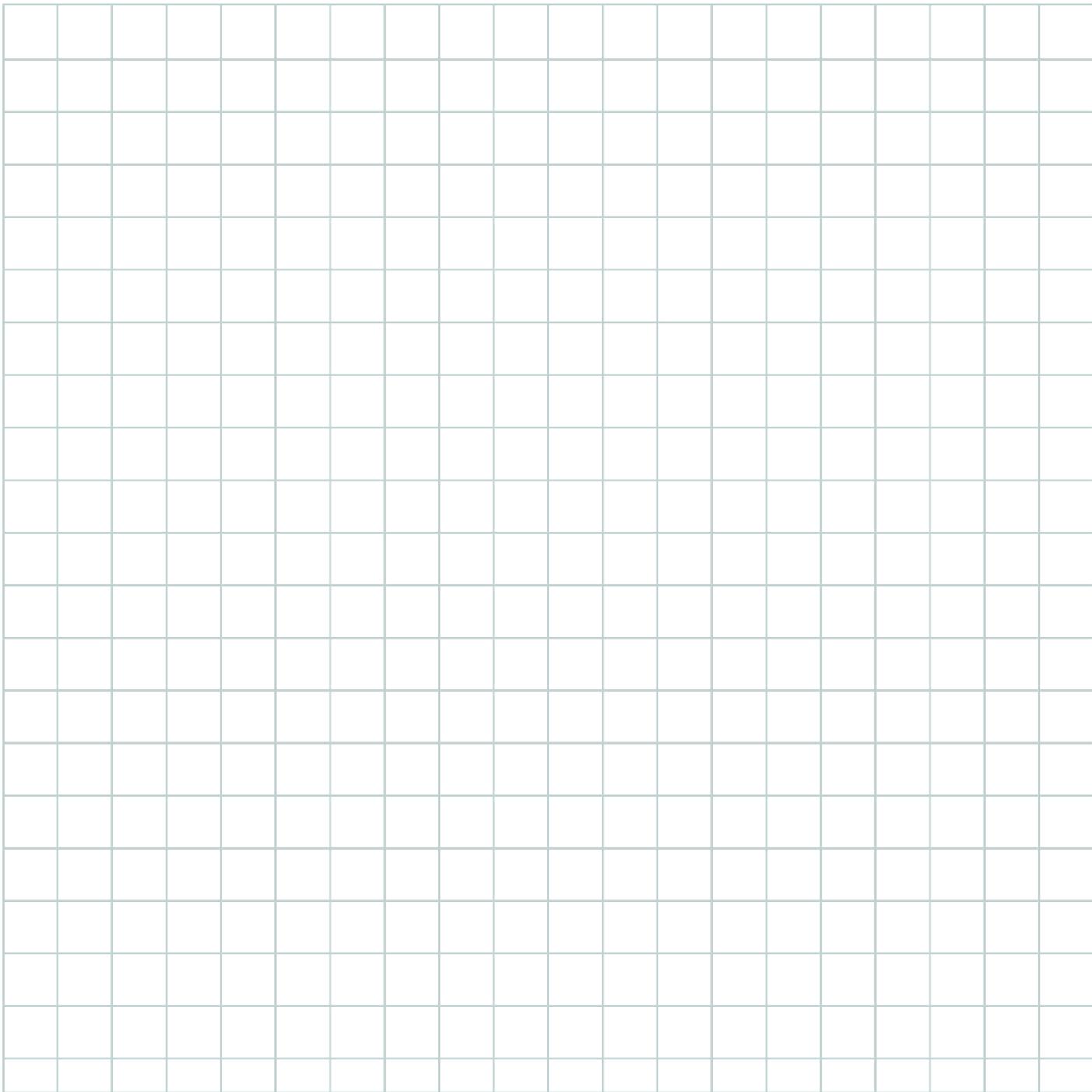
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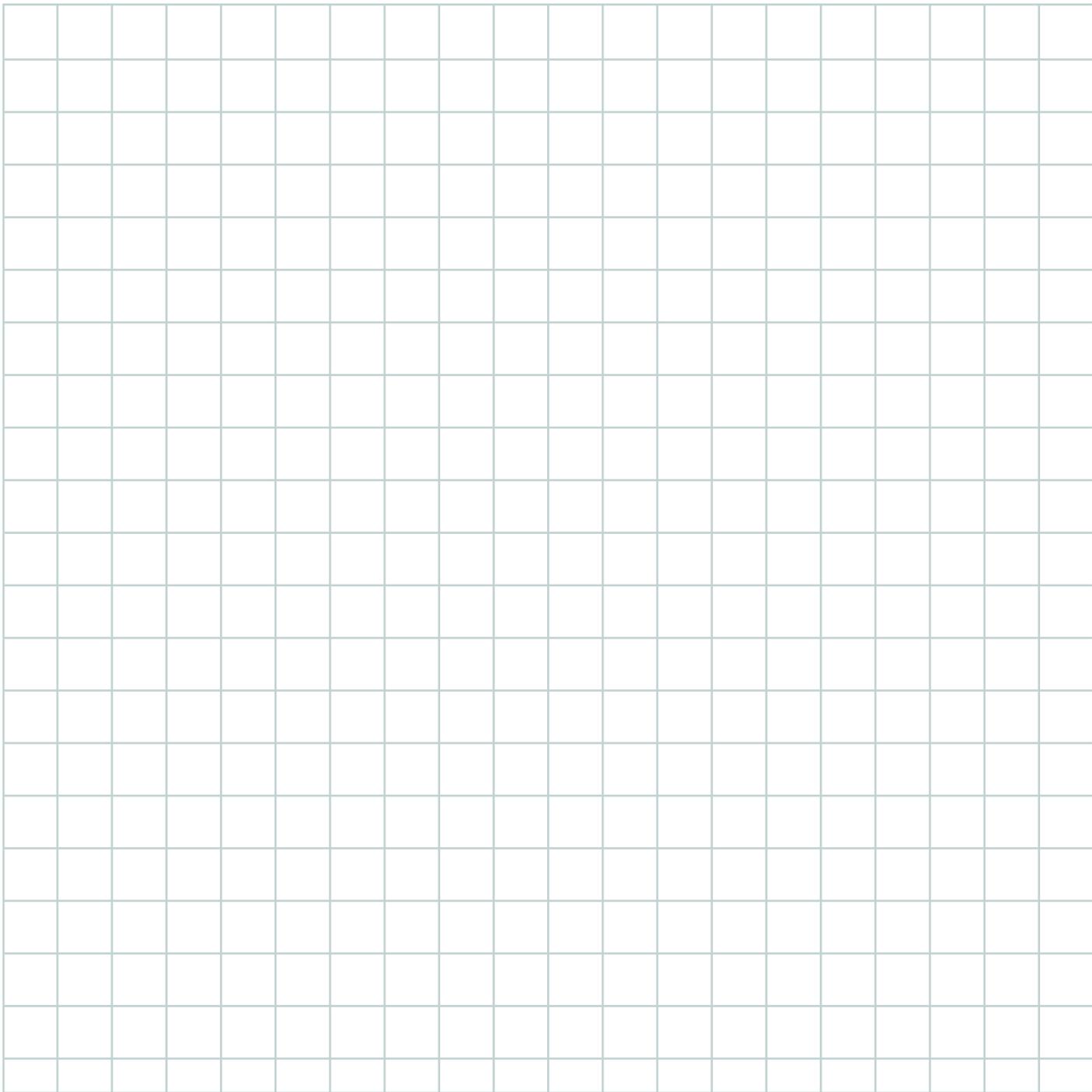
Architecture for the Sustainable Project





“If man is ignored, architecture is unnecessary”

Alvaro Siza



En primera instancia queremos agradecer por el apoyo y dedicación al profesor Lorenzo Savio, que como tutor fue pilar esencial para el desarrollo de nuestro trabajo de grado, brindándonos todo su conocimiento en el área de arquitectura.

También agradecemos a la Profesora Paola Lupano quien siempre nos brindó su colaboración y disposición en todo momento, proporcionándonos la información necesaria.

Y en cuanto a las profesionales del área de la psicología queremos agradecer a María Antonieta De Oliveira y María Isabel Pereira, que nos guiaron a través de su conocimiento en el área, sin ustedes este trabajo de grado no se hubiera logrado.

No queremos concluir los agradecimientos sin mencionar a nuestras familias que, aunque en la distancia han sido siempre parte de este camino para lograr esta meta tan anhelada, gracias por confiar en nosotras y siempre apoyarnos durante los altos y bajos.

Y por último, pero no menos importante queremos agradecer a nuestra familia elegida en Torino, nuestros amigos que nos apoyaron y fueron luz en todo momento, haciendo sentir el calor de la familia más cerca.

**Ballesteros, Antonia. Sánchez, María Alejandra.**



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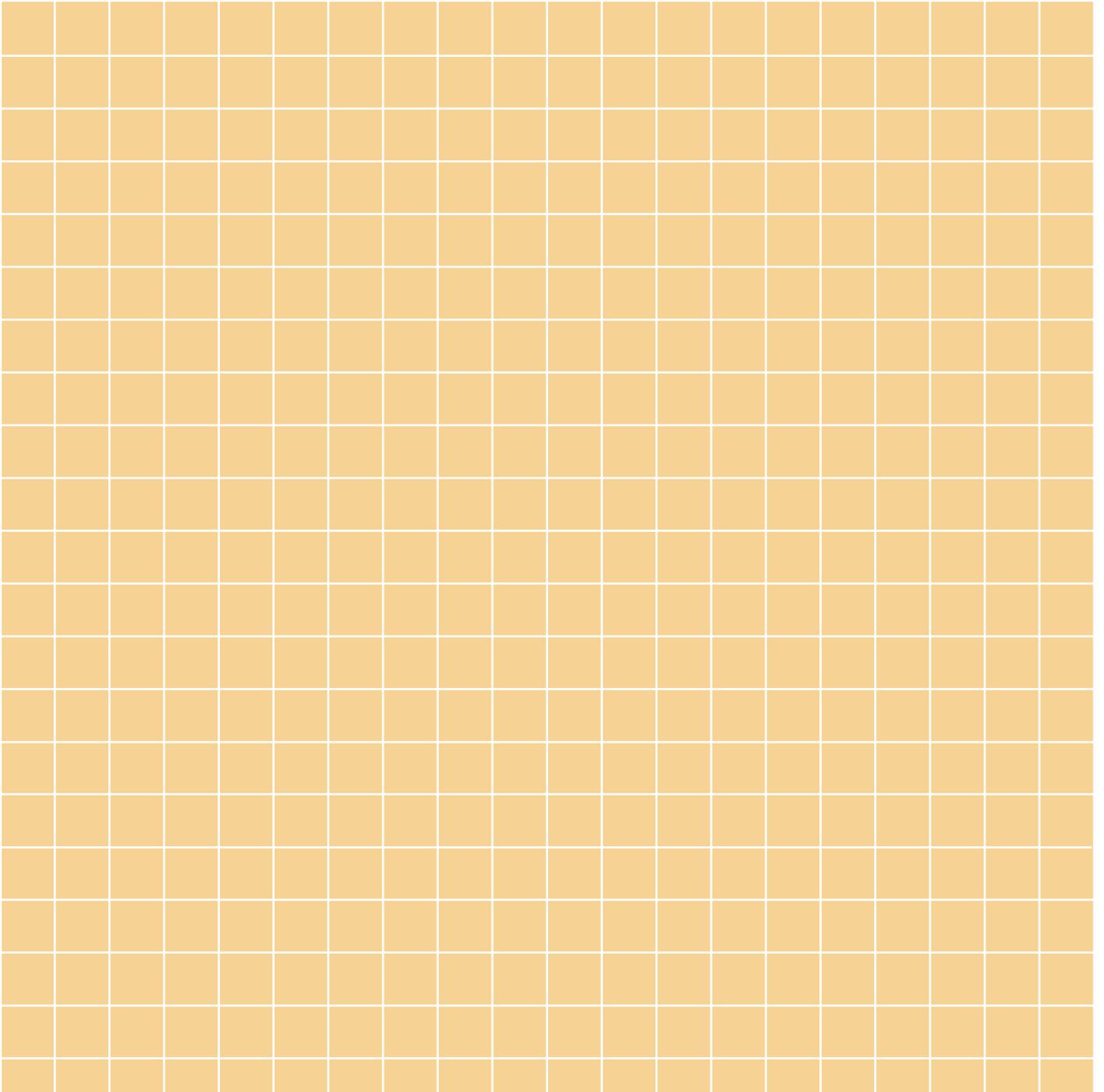
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**ABSTRACT**

**01**



**Education is one of the fundamental pillars in the life of all human beings.** We live in a world where we are educated to be all equal. We have the same opportunities to learn; however, we must understand that in our world, there is Neurodiversity; two people can't be identical, with the same capacities and potentialities. In children within the **Autism Spectrum**, we can observe that no two children are the same despite sharing the same diagnosis.

The spectrum can range from the child who has expressive language and a cognitive level that allows them to function with some limitations in society to others who do not have expressive language but have other ways of communicating. They range from the child who needs support to the child who can function independently. Everyone has the right to be included in all spaces according to their needs, learn, live experiences, and be integrated and socially accepted. Architecture is a factor that educates us to live understanding how the space we inhabit every day is perceived.

**The work starts** from the analysis of the Autism Spectrum Disorder, its understanding, its behavior, and its needs. At the same time, it reflects on the role of architecture and its influence on the social development in the user's school and, especially, on the user with autism. A series of **design and sensorial strategies** are identified of application in the school environment that **understand and meet the needs of people with autism to promote autonomy and well-being** in

their daily lives, allowing them to function and integrate with the rest of the students fully.

These strategies are obtained from the research carried out to understand the behavior in the classrooms of users with autism both socially and educationally and from the architectural references of which it was possible to understand aspects of importance for the spaces, ranging from the operation and distribution, the adequate lighting that should be used for the activity of each room, the materiality that can be implemented to have a sustainable and lasting project and last but not least the implementation of colors as use of classification and identification of the spaces, all this to achieve proper functioning of all users without exception.

**After carrying out this research process,** it is put into practice in two case studies chosen to develop the strategies, both of which went through the exact parameters of research and interviews.

**The first case study is located in Italy;** Casale Monferrato (Piemonte) is an early childhood school for children between 3 and 6 years old, with a number between 80 and 100 children; we managed to communicate with them thanks to the help of a teacher Paola Lupano, who has guided us and provided important information for the analysis of this project.

**The second case study located in Venezuela,** Barquisimeto, is a nursery school for children from 3 to 6 years old with a number

between 80 and 130 children; the selection of these two case studies was given to have two similar educational examples where you could see the comparison of the level of integration and management given to children in Latin America and Europe, during the realization of the thesis work it was decided to continue only with the case located in Italy, due to the lack of communication and information of the school selected for the case study of Venezuela, Barquisimeto.

At the same time, an analysis of the **Scuola dell'infanzia "Luzzati de Casale Monferrato"** is carried out, which begins with the study of the place, where its location and context were observed, starting from the dynamics of its surroundings including nearby uses and services, vegetation, mobility, and climate, being factors of importance to understand the first scale of the project.

Subsequently, the analysis was based on the school and its operation, observing among its aspects the strengths, opportunities, weaknesses, and threats that it could present in its facilities, which could be the beginning of the basic modifications to be made to apply the essential strategies then and achieve spaces with the desired functionality.

Therefore, after the previous analysis, a concept was developed for the internal and external spaces of the school, based on the use of pictograms, colors, and adaptable furniture as a tool for the definition of each space. The **use of colors and pictograms is due to the purpose of making it easier for children with autism to**

**recognize the activity indicated for that particular space**, where the furniture will also serve as the structure for the formation of the space, is used to subdivide the internal spaces and their different activities. These aspects are essential in the concept because they come from the **understanding of the functioning of children with autism** that was previously carried out, where it was understood that they need a clear and straightforward structure to identify how they should behave in each space and what specific function is performed in that space, such as the color blue is used for sensory regulation spaces, that is, for spaces of calm and relaxation.

After the analysis and application of the strategies, we can conclude that it is not necessary to redo a school from scratch architecturally to **provide an accessible and comfortable integration for any child regardless of their developmental condition, either social, physical, or educational**, where in addition to the provision of a functional, adequate and adaptable space, which response to the daily activities of the school, allowing the development and growth of the child in a friendly environment, introducing them to the actions of everyday life and their independence, this is also achieved from a team of teachers and professionals able to provide the support and guidance necessary for the evolution of each child equally.

**THE OBJECTIVE OF THIS WORK** is to be able to adapt and create a list of requirements from a study of strategies to modify the spaces of preschool where children from 3 to 6 years of age are taken into account, to generate a suitable place, especially for children who are within the autism spectrum disorder, and thus achieve an educational and social integration, creating an environment of healthy and appropriate development in each one, regardless of their learning difficulties or their particular ways of learning, experiencing the environment that surrounds them and generating opportunities to socialize without having the possible limitations of infrastructure, sensory stimulation, among others.

### **GENERAL OBJECTIVE**

Generate strategies to adapt existing spaces, such as the classroom and recreational areas of the school, specifically in primary education, to achieve inclusive spaces with a healthy and appropriate development environment for each child, especially for children with an autism spectrum disorder.

## SPECIFIC OBJECTIVES

1

### EDUCATION

To study experimental learning strategies through spatiality and the senses of the individual.

2

### SOCIAL

To provide solutions of inclusion and knowledge to society, allowing the integration of all users.

3

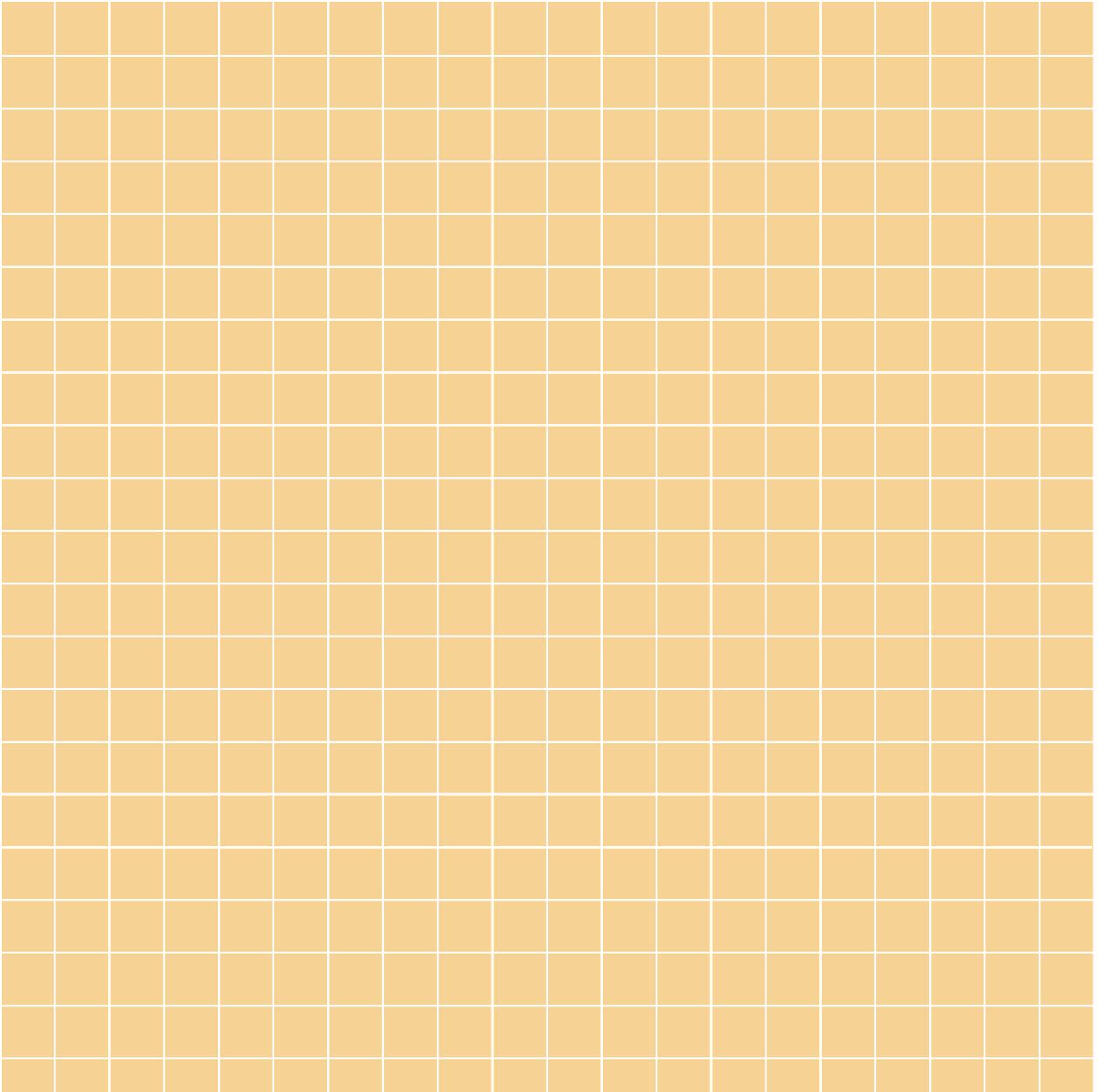
### ARCHITECTURAL (SPATIAL)

Adapt spaces such as the classroom and recreational areas of schools following factors of materials, colors, lighting, shape, and acoustics to generate accessible places that facilitate children to learn in an environment adaptable to their capabilities.

4

### SUSTAINABLE

Look for spatial strategies in which environmentally friendly materials are used, and prioritize natural ventilation and lighting.



# INTRODUCTION

# 02





## THEORETICAL BACKGROUND

The term “**autism**” originally derives from the Greek word **EAFISMOS**, which means compressed within oneself, and was introduced in the psychological field thanks to the Swiss psychiatrist Eugen Bleuler, who with his work **DEMENTIA PRAECOX OR THE SCHIZOPHRENIA GROUP**, in which it could be noted how schizophrenia could be an essential factor related to this subject.

**It can be referred to as children because they develop mainly complex problems related to neurological disorders, which have patterns, such as difficulties in social relationships and restricted and repressed behaviors.** For this reason, it could be said that autism starts from a test of interaction at the moment of socializing problems of verbal and nonverbal communication, which are the indication that leads to behaviors easy to identify since they are presented repetitively.

Consisting of behaviors that develop from infancy and through growth may follow a stable course, autistic individuals may have some aspects of their lives severely affected. Still, others may be normal or even better.

Parents usually notice the first signs before the child is two years old, and an accurate diagnosis can often be made by thirty months of age. **Symptoms begin to appear slowly from six months of age, become more explicit from two to three years of age,** and

an increase in these behaviors can be seen when the human being is at a more advanced age but may pass as less noticeable things.

**It is not considered by a single symptom but by a triad of characteristic symptoms: the difficulty of the child to relate socially with others, lack of clear or no communication, repetitive and limited actions at the time of acting in their daily life.**

Individual symptoms of autism can be found in the general population, but it is necessary to distinguish the situation by its severity to speak of pathology. There are several ideas of this syndrome, but there is no scientific support base to show its validity. Therefore, its causality is multifactorial.

**According to the World Health Organization:** *“autism is a disorder that affects a child’s neurological development. It can be very simple or severe, so it is considered an extensive disorder. Children with severe autism are usually identified before the age of two, while children with milder autism may be diagnosed in adulthood or go unnoticed without ever being diagnosed. Worldwide, the WHO has established that one in 160 children has autism spectrum disorder, which represents how easily any child can develop the condition.”*

**(Piwowarczyk, A., Horvath, A., tukasik, J., Pisula, E., & Szajewska, H. (2017, February),433–440.**

For this reason, other well-controlled studies have reported significantly higher figures.

**According to the Centers for Disease Control and Prevention:** *“the average number of diagnoses increases each year.”* (Pizur-Barnekow, K., Muusz, M., McKenna, C., O’Connor, E., & Cutler, A. (2012), 153–161).

However, this does not mean that “there is more autism,” but instead that it is being diagnosed more rapidly, indicating that there may be more cases than are known.

**When referring to autism with the word disorder, it can be associated with a negative connotation to be named a condition.**

It is considered a condition that affects to a greater or lesser extent the social interaction of children through communication, behavior, language, and sensory integration—perceiving it as a different way of interpreting the world, words, colors, shapes, sounds, and everything around us.

Each individual with autism has different characteristics, being a unique combination so that they may share similarities in some behaviors, but no two cases will ever be exactly alike.

**Autism does not have prominent physical characteristics as other neurological conditions** may have, which does not allow people to empathize with the attitudes or reactions of individuals with the disease, in addition to the lack of awareness and information

worldwide, which reduces tolerance to the way of behaving and inclusion to social normality.

**According to the American Academy of Pediatrics:** *“there are three lines of research according to genetic factors”* (**American Psychiatric Association Diagnostic and statistical manual of mental disorders, fourth edition. Washington, DC American Psychiatric Association.1994**). They have shown that different genes and external factors during the child’s pregnancy stage cause the human being to present ASD.

Finally, another line of study is based on neurobiological factors, based on the analysis of some brain cells. However, the exact causes of autism are still unknown, although it is believed to be a genetic component caused by an external factor, so there is nothing conclusive.

Based on the studies, for autism, diagnosis and therapeutic support are fundamental since early detection is ideal, allowing a better development of skills thanks to brain plasticity.

However, personalized and specialized therapeutic follow-up is critical to improving the quality of life at any age.

Therefore, we can say that autism does not understand race, gender, or social group.

Each family faces different challenges, as many factors intervene when having all the resources available to provide everything a child

with ASD needs. However, they all have a **common challenge**: the lack of information and awareness in society to generate inclusive environments, our motivation, and the architecture to create inclusive spaces.

For this reason, it is essential to increase awareness and education about autism. Increasing knowledge on the subject allows for early diagnosis and expands the possibilities of integrating children with autism into society and normal daily activities.

**Autism is one of the five pervasive developmental disorders (PDD).** It is characterized by social interactions and communication abnormalities, restricted interests, and highly repetitive behavior. Some different behaviors and symptoms can be classified on lesser and greater severity; autism presents behaviors of more incredible difficulty, which can be very different in each human being.

It is often referred to as "autistic disorder," "infantile autism," or "autism in infancy." In some individuals, autism may be silent or manifest only as a mental disability. In contrast, they may exhibit anxiety and restlessness in others under challenging situations, leading to uncontrolled body movements and aggressive gestures or loss of self-balance.

**Some people with ASD may be expected in all aspects of life, except for social awkwardness. They may have particular interests. There are different categories in which the person**

**may be diagnosed because they may present numerous diagnoses and behaviors with various patterns.**

On the other hand, stimulation is critical, and early intervention reduces family stress and increases the child's coping skills and future social development.

**Among the supports that can be implemented to help children with ASD are psychology, speech therapy, and occupational therapy, which can lead to a process of the difficulties and strengths of the individual, which will help to keep track to help him.** This should be carried out with the accompaniment of teamwork formed mainly by the parents and professionals specialized in the subject and their most frequented environment, the school, where their teachers will be people of great support.

Early stimulation and intervention reduce family stress and increase the child's coping and social development in the future. Teamwork is also fundamental for a more effective intervention involving parents, professionals, neurologists, and the school.

**To facilitate the inclusion of children with ASD (autism spectrum disorder), specific actions or characteristics should be considered for their adaptation.**

Starting by reinforcing what is still weak means working on each child's weaknesses, which can sometimes be the most common for a child with ASD, such as communication or social area. In other cases

are more specific or with a different level variable.

By reinforcing their strengths, all this will lead the child to increase their capabilities so that some can live independently and others can do so with the support of a person in the course of their lives.

Social development (social attitudes) and the level of support they may have from society are essential factors determining their quality of life. It is necessary to know that it is the job of the child with autism and the whole environment where we include the family, friends, and society, so the knowledge or awareness of the subject is essential.

**Organizations such as the WHO (World Health Organization) seek to promote inclusive and supportive environments for people with autism and other developmental disabilities.**

This factor generates that society is more informed about this issue and will understand some behaviors. This can also be considered in the design and organization of spaces to achieve their integration, minimizing sensory problems that a user with autism may present.

The main characteristics that should be considered to achieve a positive inclusion of children in schools, we can highlight the following; having a staff open to the approach of inclusive education, willing to invest time in planning their classes, where the participation of all members of the educational community is reflected.

Attention to the diversity of interests, abilities, rhythms, and learning needs of each student.

They are encouraging the participation of parents in the areas of school activities, support for specific learning, and monitoring of their children's progress.

**The aim is to create bonds of coexistence and tolerance among the entire educational community to facilitate the diversification of teaching and the personalization of the different learning processes.** Finally, the innovation of dynamic activities and methodologies allows the training of teachers for the inclusive classroom, which is a multifaceted process that must be initiated in the training institutions, which generates the creation of a new and more appropriate educational method.

It is essential to generate opportunities for participation in the community, in society, and school, so that children with ASD begin to create social links with other people and so they can implement it more in their daily lives; the participation of parents in this moment of integration is essentially essential, as they will be their most outstanding support.

**Adequate inclusive environments are created for children, which generates that they reach a deeper level of integration with their peers, which leads to maximizing independence, which will be reflected in a future that will provide a healthy environment in their daily lives and in their work/vocational activities that allow children to be independent.**

## HISTORY TIME LINE

**1887**

**Dr. John Down,**

began to investigate people with developmental delay, within this category were classified people who today would be autistic.

**Dr. Eugen Bleuer,** proposed the term autism in the psychiatric literature describing a group of children who seemed to be “closed in on themselves” (basic disturbance in schizophrenia), who presented a distinct thinking “autistic thinking”.

**1911**

**1927**

**Eugène Minkowski,**

a student of Bleuler, investigates autism in depth and concludes that autism is the “generator of schizophrenia problems”.

**Leo Kanner,**

from John Hopkins Hospital, makes a medical classification of autism, naming it as “early infantile autism”.

**1943**

**1944**

**Hans Asperger,**

defined “autistic psychopathy”, but his work was not recognized until 1981.

**Charles Ferster (Learning psychologist),**

and child psychiatrist Miriam K. DeMyer, demonstrated the efficacy of the Operant Behavior Modification Methods.

**1961**

1972

**Eric Schopler**, Schopler initiated the Treatment and Education of Autistic and Related Communication Handicapped Children. The purpose of the TEACCH program is to create tools for improved social functioning in individuals with Autism.

The term “infantile autism”,  
was added for the first time to the Statistical Manual of Mental Disorders (1980),  
under impulse control disorders.

1980

1987

The term “infantile autism”,  
was replaced by “autistic disorder” in the Statistical Manual of Mental Disorders  
and a broader diagnosis was given.

**Some schools** begin to recognize the population with autism and to include  
them in the learning process; likewise, some schools specialized in teaching  
children with autism appear.

1991

1993

**The fifth edition of the Statistical Manual of Mental Disorders is published**,  
in which significant changes are made to the criteria for the diagnosis of autism.

**The DSM-V** (Diagnostic and Statistical Manual of Mental Disorders),  
introduced the category of autism spectrum.

2013





Child Psychologist María Antonieta De Oliveira

Image source: provided by the psychologist María Antonieta De Oliveira.

## INTERVIEW CHILD PSYCHOLOGIST

**Child Psychologist Maria Antonieta De Oliveira** specialist in Child development and its deviations, Play Therapy, Family Therapy, and the Management of Cognitive-Behavioral Techniques.

Throughout my professional career, I have worked with the development and school integration of children with Autism Spectrum Disorder, children with developmental difficulties, ADHD, Behavioral Problems, and Early Stimulation.

### Questions:

#### **How is Autism Spectrum Disorder defined?**

To give a theoretical introduction to the definition of autism spectrum disorder, we can say that it is “a neurological dysfunction with the genetic basis that from an early age manifests itself through a series of symptoms based on a triad,” which was defined by Lorna Wing, a British psychiatrist as, “disorder of social reciprocity, a disorder of verbal and nonverbal communication and absence of symbolic capacity and imaginative behavior.”

#### **In your experience, what are the diagnostic criteria based on?**

The diagnostic criteria are eminently clinical, but according to the new edition of the **DSM V manual of DISORDERS** are:

-Persistent deficits in communication and social interaction in various

contexts.

-Restrictive and repetitive patterns of behavior, interests, or activities.

-Symptoms should be present in the early developmental period. However, they may not become fully manifest until the demands of the environment exceed the child's capabilities or maybe masked later in life by learned skills.

-Symptoms may cause disturbances in essential areas of age-appropriate expected functioning. E.g., Social Area.

### **What behavior can be observed in children with autism?**

1. They avoid the gaze of both adults and peers.
2. They have no language, use few words that do not match their age, or have a very stilted language. They speak in the third person.
3. Echolalia: repetition of syllables or words in a non-functional manner.
4. They seem deaf, do not obey simple commands, or sometimes do not respond to their name.
5. They prefer solitary play or parallel play.
6. They do not engage in symbolic play. They line up toys.
7. They do not share the play with their peers and friends.
8. Strong preference for technology, computer, video games.
9. They show stereotyped behavior.
10. Reiterative themes.
11. They like to see things in motion or use objects to turn them.

12. Tactile, auditory or visual hypersensitivity.
13. Selectivity with foods and textures.
14. They may not be aware of the danger.
15. Tantrums, low tolerance to frustration.
16. Difficulties in adaptive behavior.
17. Low level of emotional intelligence.

**What is the treatment for children with autism, or how can they be helped to improve their development?**

Stimulation is fundamental. Early intervention reduces family stress and increases the child's coping capacity and social development in the future.

Therapies that the child should have: Psychology. Speech Therapy and Occupational Therapy. The teamwork is fundamental for more efficient intervention. We involve Parents, Professionals, Neurologists, and schools.

**What are the basic requirements for a space that aims to achieve the proper functioning of children on the autism spectrum in education and in the social area when interacting with their classmates?**

For children on the autism spectrum, it is essential to have a structure

within the classroom, from which you can start from the clear separation of spaces according to the activity to be performed, accompanying each activity with pictograms, which are particular communicative images, and that express a message to be transmitted, so it is a resource widely used by teachers to give information to children about the activity to be performed in that particular space.

Besides considering that the classroom must have the correct lighting without any flickering, ventilation is essential so that odors do not stagnate in the school. The school's temperature must always be stable and comfortable for children within the autism spectrum because all these elements can generate stress and overload them seasonally, altering their attention and irritability.

Another relevant factor is the materiality and safety that exist in the classrooms. To allow their independence within the school, the furniture must be resistant and have specific safety parameters, such as foam rubber protection on the walls, eliminating sharp corners on furniture and walls to avoid bumps on the children.

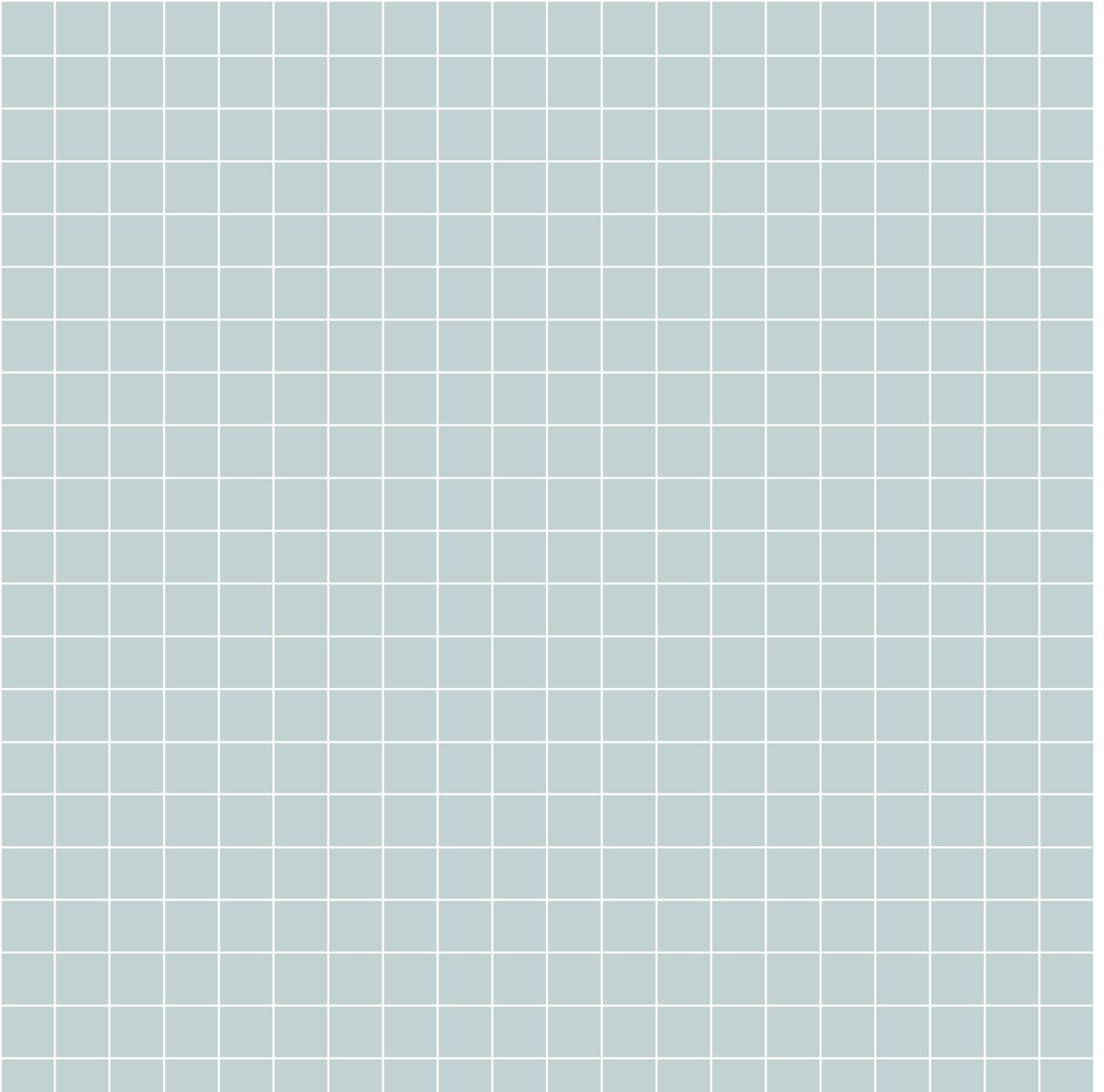
All these factors will facilitate the development of children on the autism spectrum in the classroom and with the rest of their classmates, but this does not rule out the possibility of their irritability or social sensitivity on some particular day. Therefore, it is advisable to include an area of calm space or sensory regulation in the classroom, where the child can isolate and calm down to follow the classroom activities again.

Therefore, in special education centers for children with ASD, a structured teaching method should be used based on the premise that most children with Autism generally learn through the visual channel, and therefore, it is essential to adapt their environment to their characteristics so that they can be as autonomous as possible.

**For this purpose, it is essential to:**

1. Physical structure, where the classroom is structured to make sense.
2. Visual schedules to show the child what is happening.
3. Work systems, which indicate how the tasks are organized and structured within the different spaces of the school.
4. Complementary visual information refers to additional instructions that help them complement the tasks and make good use of the organized spaces within the classroom.

**June 2021. Barquisimeto, Venezuela.**



# AUTISM ARCHITECTURE



## AUTISM ARCHITECTURE

*“Projecting the impossible or building almost utopian dreams is synonymous with splendor, medals, trophies. Still, the reality is that, without the observer or the occupant, our work of art becomes only concrete and iron, a meaningless element, without reason for being.”*Ovacen, P. (2021, October 23). **Architecture for all.**

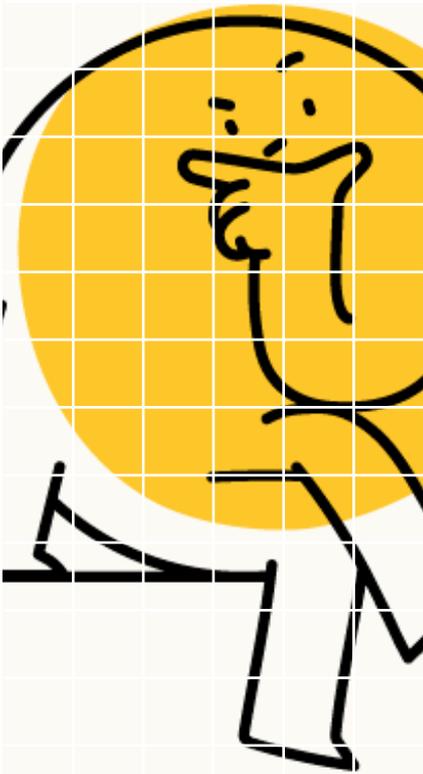
### **Autism. OVACEN digital newspaper.**

We can understand that we are not all the same and that we all perceive things differently, even being aware of this and knowing that architecture should be inclusive. For everyone, we involuntarily forget it. When designing, we do not consider details that can make a pleasant space for everyone an uncomfortable space for others, from accessibility to the overload of stimuli, among other aspects.

So, to achieve inclusive spaces, it is essential to consider the minimum features. There are a thousand building design standards in which architectural practice considers people with different types and degrees of disability: visual, hearing, and mobility.

However, people with specific cognitive, sensory, etc., characteristics are not considered.

**The environments for people who are within the autism spectrum are strongly related to how each of them perceives it since this perception can be conceived from different factors,** for example, the lighting, the number of people who are in the



place, the smells, the noise, and many other things. All this can cause different reactions in children, since being within this spectrum, they must make a more significant effort to assimilate and understand their present environment.

The action of knowing is called cognition and, when it refers to the physical environment, it is called spatial cognition. Here, the difficulty increases in autistic people who recognize a disorder and disorientation. They have problems organizing globally and coherently the different elements that make up the physical space.

In particular, recommendations for coherent architecture in the face of autism should consider the value for autistic people of preparation before an activity, as this allows information to be processed at the pace required by the individual. This prepares the children, reducing their anxiety and improving their confidence in learning.

**When relating architecture to autism, we must reflect on those essential requirements for the best functioning of children in the classroom, generating functional spaces according to their needs.** The structure should be maximized to be more specific regarding the visual area, organizing the environment through concrete visual cues and visual hierarchy, incorporating coding through colors, numbers, symbols, labels, etc. For example, pictograms are necessary

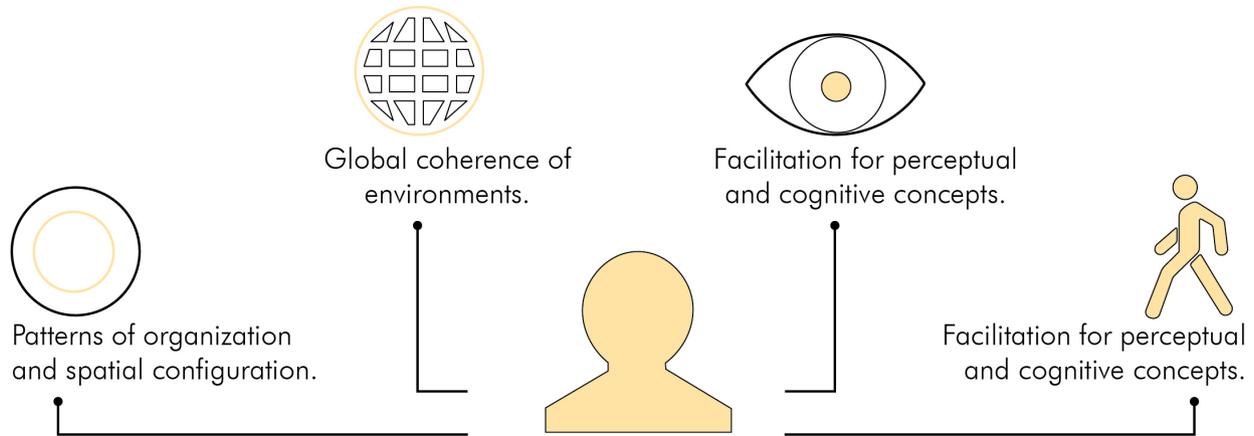
to indicate what action is performed in that space.

**To help children with autism meet social demands, generous spatial norms should be generated, and withdrawal spaces should be provided, being quiet areas that allow the child to self-regulate to avoid stress and anxiety in rooms where numerous social interactions are required, as they are sensitive to the loss of personal space and this can cause them fear and anxiety.**

The understanding of space is another crucial point for the independent functioning of children where clear designs, direct paths, simple shapes, and visually uncluttered spaces help students with autism to perceive the school environment more efficiently, always taking into account minimizing risks for students due to their condition, which in many cases includes not sensing danger.

Multisensory stimuli should be included in these spaces to facilitate integration, such as places where activities such as rolling, jumping, spinning, vibrations, music, visual experiences, etc., are performed. Therefore, these features can provide more friendly spaces for users with autism of all levels, being essential to maximize the durability and minimize the maintenance of equipment, furniture, fixtures, and fittings.

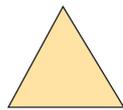
## CHARACTERISTICS OF ARCHITECTURAL PROJECTS FOR PEOPLE WITH AUTISM



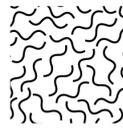
### Management of factors such as:



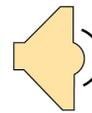
Lighting



Shapes



Textures

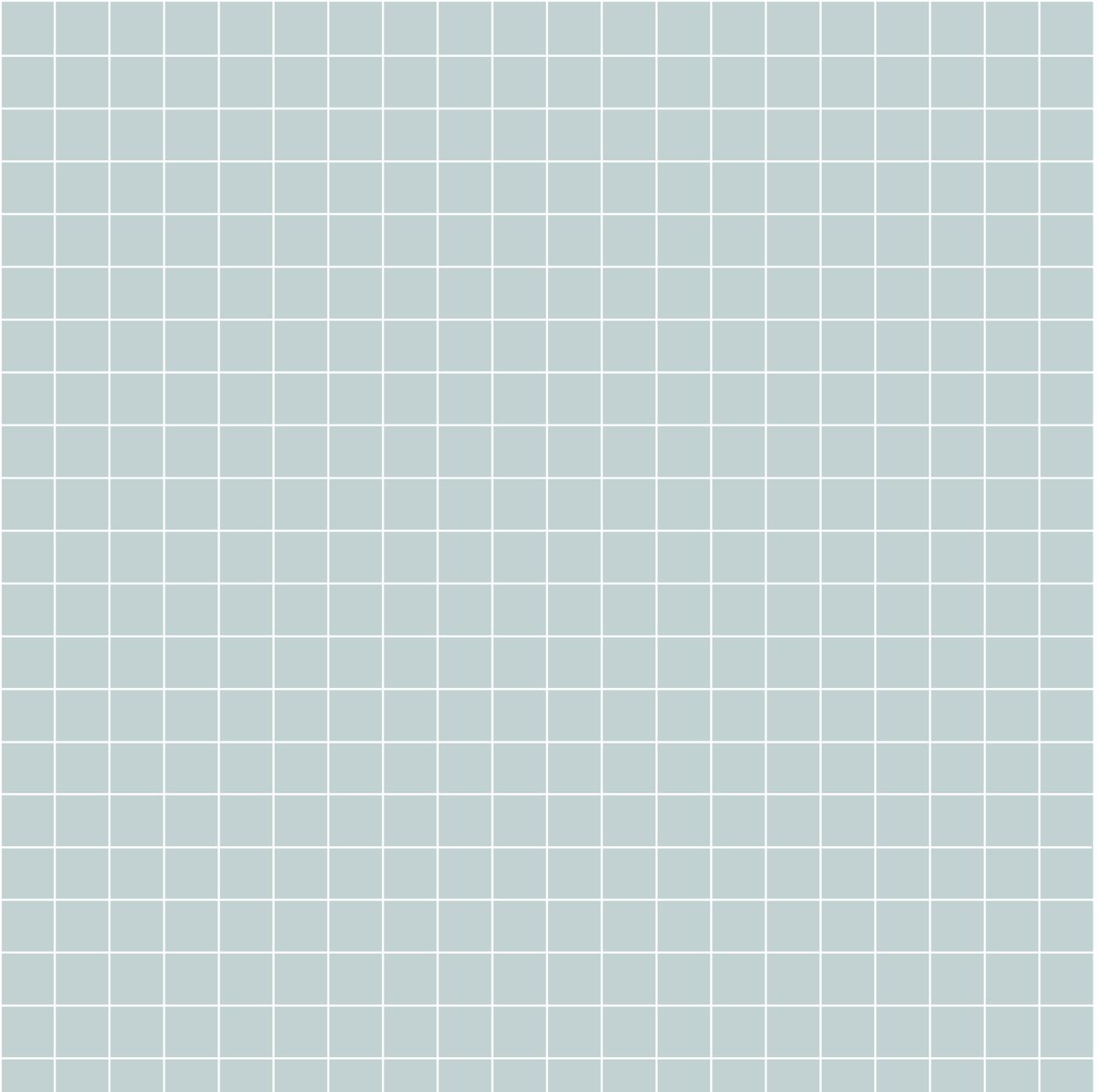


Acoustic



Colors

Source: Mora, K. (2017, February 23). Técnicas Arquitectónicas Son aplicadas para la Mejora del Autismo. TEC. Retrieved September 7, 2021, from <https://www.tec.ac.cr/noticias/tecnicas-arquitectonicas-son-aplicadas-mejora-autismo>.



# AUTISM VENEZUELA



## AUTISM IN VENEZUELA

**Autism or ASD is a topic that lacks knowledge and awareness in the Venezuelan population at all educational levels.** For this reason, there is no database regarding the number of people with autism in the country.

There are **studies carried out by different specialists where it is estimated that in the country, out of every 45 children born, one has this condition**, and when comparing this figure worldwide, according to the data handled by the WHO, one out of every 160 children is born with some autism spectrum.

Lack of knowledge causes the level of integration of children with autism in the school environment to be shallow, and the lack of knowledge and awareness in the Venezuelan population at all educational levels.

There are psychology centers and schools where they work with the children to promote good development and prepare them and their families to achieve their integration and condition in daily school life like other children. Still, these institutions are very scarce or private; there is no easy access to specialists that are part of developing children with autism in the public sphere.

**The laws in Venezuela** organize the activities and regulate people's behavior and the situations they go through, determining

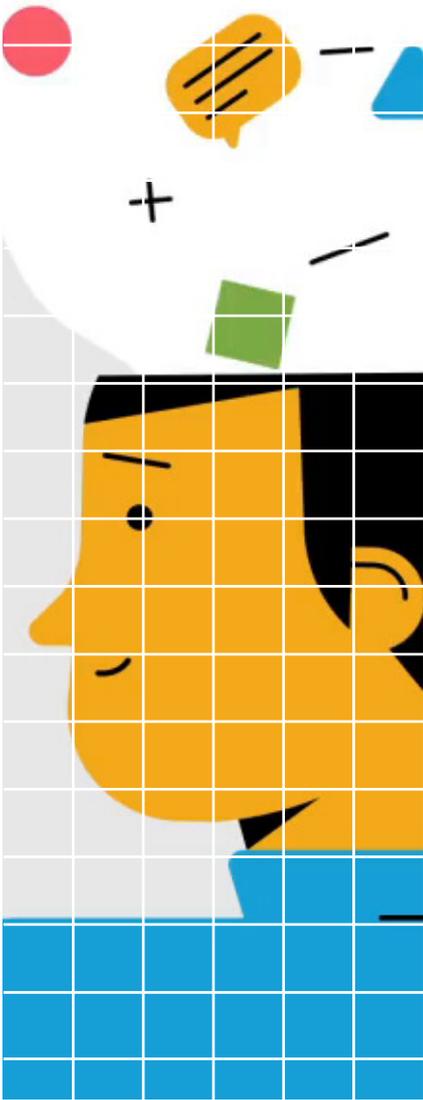


Image source: Feitosa. (n.d.). Growing Mind. Dribbble. Retrieved January 2022, from <https://dribbble.com/shots/6722399-Growing-Mind>.

the functioning of institutions such as schools, hospitals, civil registry, state powers, and government agencies.

In Venezuela, there are protection and organization laws as in the rest of the world. Although what refers to people with ASD or learning conditions are included, articles in the “law of care and comprehensive protection for people with autism spectrum disorders (ASD) and related” are not adequately fulfilled, generating a deficit of integration of these individuals disrespecting their rights as citizens. To briefly understand what the law of autism in Venezuela refers to, we can highlight that numerous schools and institutions are specially dedicated to the training and accompaniment of children with autism.

**However, different Venezuelan civil associations warn that few professionals are trained to assist people with ASD.**

In addition, they indicate that there are few efforts to integrate children with ASD in regular schools, questioning that the deficit of specialists impacts the late diagnosis of the disorders.

The **objective of this Law is to guarantee the comprehensive care and protection of people with Autism Spectrum Disorder and similar conditions.** In addition, it seeks to establish a legal regime for people with Autism Spectrum Disorder (ASD) and similar diseases that promotes early and timely diagnosis, immediate intervention, health protection, inclusive education at all levels, training, labor,

and social insertion, including culture, recreation, and sports, as well as the strengthening of organizations working for the benefit of this population.

This law covers several essential topics for integrating people with autism: health rights, education, social security, labor security, human rights, and most importantly, awareness, to inform society in general about Autism Spectrum Disorders through awareness campaigns.

The National Assembly discussed legislation to protect people with ASD.

*“On May 26, 2016, the “Law for the Comprehensive Care and Protection of Persons with Autism Spectrum and Related Disorder” was unanimously approved in the first discussion but was never sanctioned or sanctioned enacted.”* **(Ley de Atención integral y protección para las personas con trastornos del espectro autista (TEA) y Condiciones Similares. Transparencia Venezuela.2021, May 29).**

The law in terms of education proposes to include in the curricula of careers in Education, Psychology, Pediatrics, Psychiatry, Psychiatry, Speech and Occupational Therapy, a subject referring to Autism, it should also be included in the training of public servants, such as firefighters, police officers, members of the armed forces, also in human resources departments, for a labor inclusion.

In addition, each student with autism should have a specialized tutor until their educational process requires it.

The sports area seeks to promote the creation of camps, where the aim is to develop social skills, create modules for people with autism, and encourage recreation.

Regarding health, the law proposes the creation of a National Institute for Autism Spectrum Disorders, in conjunction with the Ministry of Health and the lines of research on Autism; in this way, the law on autism in Venezuela will guarantee the attention required by this population.

And finally, at the level of transportation, it must be free of charge at the urban public level; on the other hand, in the interurban, air, fluvial and maritime, they will have a 50% discount.

**The law on autism in Venezuela seeks to guarantee social protection and provide them with a pension equivalent to the minimum salary throughout their life from the moment the condition is diagnosed.**

## **“LAW OF ATTENTION AND INTEGRAL PROTECTION TO PEOPLE WITH AUTISM SPECTRUM DISORDERS (ASD) AND RELATED DISORDERS”**

### **STATUS**

Approved in First Discussion on  
May 26, 2016.

In process of Public Consultation

### **FEATURES**

Initiative:Parliamentary Committee

Legislative Period: 2016-2020

Type of law: Organic

### **WHO IS WORKING ON IT?**

Standing Committee on Social  
Development.

Source: Ley de Atención integral y protección para las personas con trastornos del espectro autista (TEA) y Condiciones Similares. Transparencia Venezuela. (2021, May 29). Retrieved September 25, 2021, from <https://transparencia.org.ve/contraloria/>

## RELEVANTS ARTICLES:

(Ley de Atención integral y protección para las personas con trastornos del espectro autista (TEA) y Condiciones Similares. Transparencia Venezuela. (2021, May 29).)

### ARTICLE 11:

“Persons with Autism Spectrum Disorder (ASD) and similar conditions shall have the right to receive an adequate and permanent education. The State shall make the necessary adjustments to effectively achieve the processes of integration and inclusion of these persons, bearing in mind their capacities and potentialities identified through the differential approach.”

### ARTICLE 12:

“All educational centers, both public and private, shall guarantee the presence of personnel with knowledge of Autism Spectrum Disorder (ASD).

Public and private educational centers shall ensure that adequate measures are provided based on the individual characteristics of persons with Autism Spectrum Disorder (ASD) and similar conditions to maximize social development and educational inclusion.”

### ARTICLE 14:

“Educational centers shall consider the levels of functioning present in persons with Autism Spectrum Disorder (ASD) and similar conditions to

create the necessary strategies according to their level and guarantee their effective integration and inclusion.”

**ARTICLE 15:**

“All higher education centers, both public and private, must include in the curriculum of each of the careers in the area of education, health, social work, and related fields, a chair oriented to the study of the Autism Spectrum Disorder (ASD) and similar conditions.”

**ARTICLE 16:**

“All the Protection and Security Components of the State (Police, National Guard, Firemen, and Civil Protection) must receive training to deal with people with Autism Spectrum Disorders and similar conditions.”

**ARTICLE 19:**

“All educational centers nationwide, public and private at all levels, are obliged to allow the assistance of Educational Tutors for persons with Autism Spectrum Disorder (ASD) and similar conditions. ”

**ARTICLE 20:**

“All educational centers nationwide, public and private, are obliged to enroll or register persons with Autism Spectrum Disorder (ASD) and Similar Conditions.”

**Note:** All articles source “Ley de Atención integral y protección para las personas con trastornos del espectro autista (TEA) y Condiciones Similares. Transparencia Venezuela. (2021, May 29).”from <https://transparencia.org.ve/contraloria/>.

## FOUNDATION “AUTISMO EN VOZ ALTA”

CARACAS, VENEZUELA

**It is created in Caracas, Venezuela, as a non-profit organization.**

In the absence of educational resources for children on the autism spectrum, a family decided to create a foundation to integrate and educate the children. This is achieved through a team of architects and specialized professionals.

**The trajectory of the foundation** began with its creation in 2006, where at the same time, they generated certification and specialization programs with universities such as Monteavila University in Caracas, Venezuela.

Subsequently, in the period 2008-2010, the construction and inauguration of the foundation’s headquarters were carried out to expand its spaces, which allowed them to start providing special assistance services in different areas such as diagnosis, therapy, psycho-educational programs, and others.

Internships, workshops, and informative talks for parents and professionals were incorporated, and then in 2020, distance services were introduced: development, detection, and support.

**One of the main objectives of Voz Alta is to provide a place for growth and learning focused on the autism spectrum.** This place has 2,700 square meters, whose structures are specially designed to serve people with ASD. This approach seeks to reference

organization and education, where the project is seen through the learning classrooms—giving people with ASD the opportunity to receive the best education regardless of their financial resources.

*“Teach assuming the capacity of the person with autism. Everyone can learn. We recognize specialized education as the greatest hope for integration and self-improvement for people with autism.”*

*“Recognize that a person with autism is part of this world, not a world apart.”*

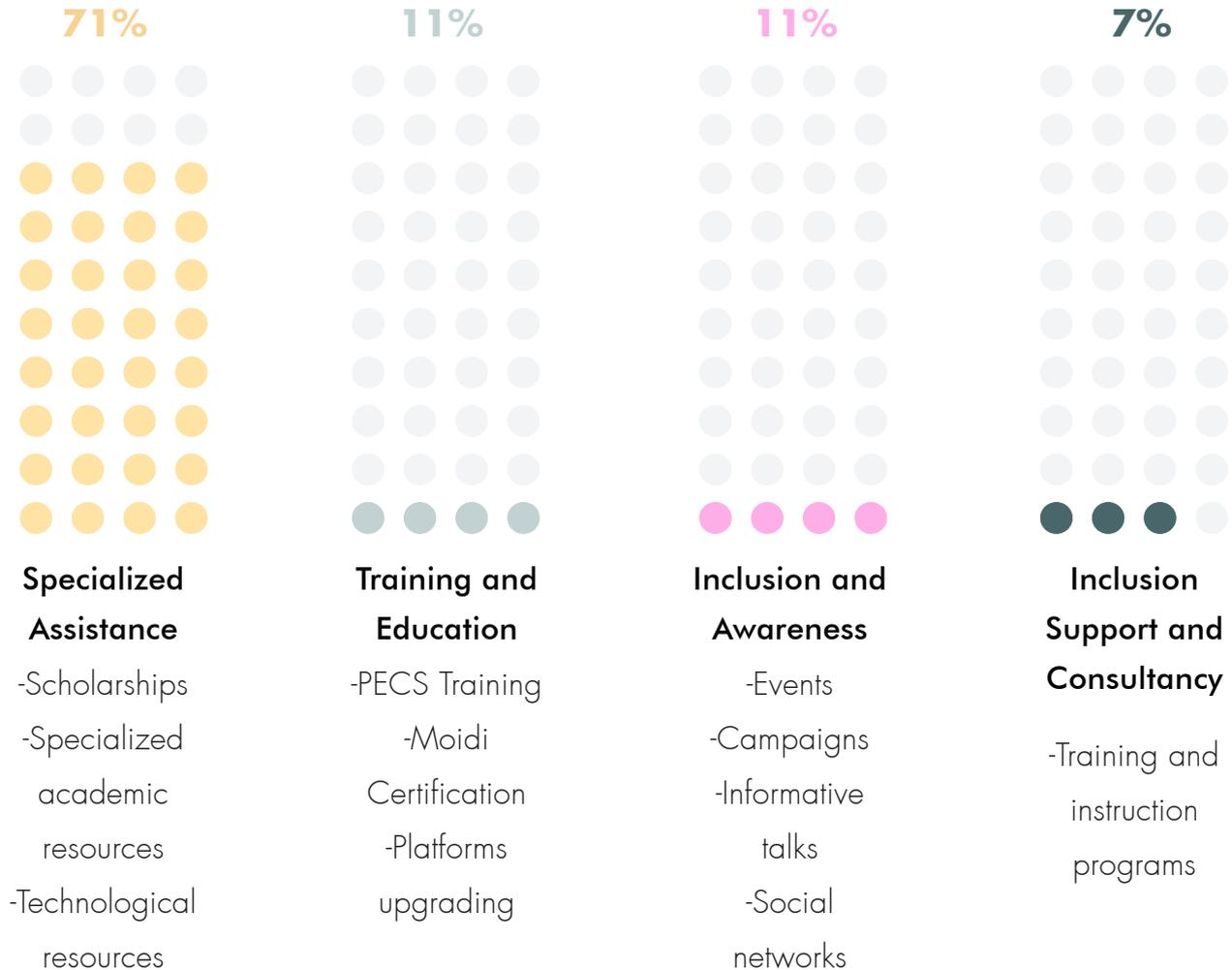
*“We not only educate people with autism, but we teach, support, and create awareness in the world around them (parents, teachers, and community).”*

*“Work from the person’s strengths and interests to achieve independence.”*

*“Ask what they like, what they are interested in, what they are good at, and we develop those skills. We teach people with autism to achieve independence and inclusion in their environment.”*

**Note: all quotes source “Fundacion Autismo en Voz Alta. Autismo. (2021, November 16). Retrieved December 26, 2021, from <https://autismoenvozalta.com/>”**

## ACTIVITIES OF THE FOUNDATION



Source: Fundacion Autismo en Voz Alta. Autismo. (2020, November). Retrieved December, 2021, from <https://autismoenvozalta.com/>



**María Isabel Pereira Vice-president and Director,  
Foundation "Autismo en Voz Alta"**

Image source: provided by the vice-president and director of the school

## INTERVIEW FOUNDER AND VICE PRESIDENT FOUNDATION

### **María Isabel Pereira, Psychologist and Vice President-Founder of Autismo en Voz Alta.**

“Together with the foundation, we seek to generate a positive impact on children with autism and their families through education, generating changes and improving the quality of life of the child with autism, his family and his environment, starting from the acceptance, recognition, and valuing of human beings regardless of their condition. The foundation accompanies the journey and inspires to persist, with patience, optimism, and hope.”

#### **Questions:**

#### **Based on your experience, how does autism affect life, educationally and socially?**

Autism affects how a person communicates, socializes, and experiences the world around them.

It presents itself in different degrees, from mild, almost imperceptible forms, to more severe conditions with greater involvement in other areas.

With proper diagnosis and intervention, the person can develop skills that favor their quality of life.

Therefore, with early diagnosis and teamwork with the appropriate

professionals and the family, the child will improve his social weaknesses and achieve complete integration in the educational area.

### **- What would an ideal integration school be like for a child on the Autism Spectrum?**

For a school to be ideal for the integration of children with autism, certain aspects must be considered that are key to avoiding overstimulation or irritability in children with autism.

To begin with, the spaces should be ample so that the child can function autonomously, with well-delimited rooms, clear areas, identifying routines, and stretches. The characteristics of the spaces should allow the child to locate the action to be done in the distance.

For the furniture, these should consider durability and protection to avoid any accident with the children.

The visual elements must be strictly functional because otherwise, they can be a distraction for children, so pictograms will help children identify each space's activities and how they should behave.

Lighting and acoustics are also an essential part of the spaces' design because they can generate distractions in children. A light that flickers or a lot of noise can cause irritability in children and create distractions in the classroom with the rest of the students.

Ventilation and temperature of the spaces also play an essential role

because odors and temperature variation can be another irritability factor for children with autism; it should be kept between 20 and 22 degrees.

Finally, another critical factor is the calm and sensory regulation spaces, which are spaces where the child can see as a safe area to have a few minutes of recovery with music and low light to then rejoin the activities with the rest of the students.

### **How were the foundation spaces designed, where were the abovementioned factors included?**

The spaces where the foundation is developed were designed by a multidisciplinary team, including psychologists, parents, and architects, to achieve the correct functioning of children with autism in daily school activities, taking into account their learning and socialization needs with other students.

These factors mentioned above were fundamental to achieve the balance of the spaces where children with autism would be integrated since they are essential to avoid overstimulation that could cause irritability in children and provoke problems in the learning process, generating inconveniences for all students and teachers because each one avoids a condition that would be unfavorable for the daily life of the school.

**In the following video, you can see a summary of the trajectory and operation of the foundation:**

<https://www.youtube.com/watch?v=9QwYNoSckXQ>



Source: Pictures provided by the vice-president and psychologist Maria Isabel Pereira of the Autismo en Voz Alta Foundation. <https://autismoenvozalta.com/>

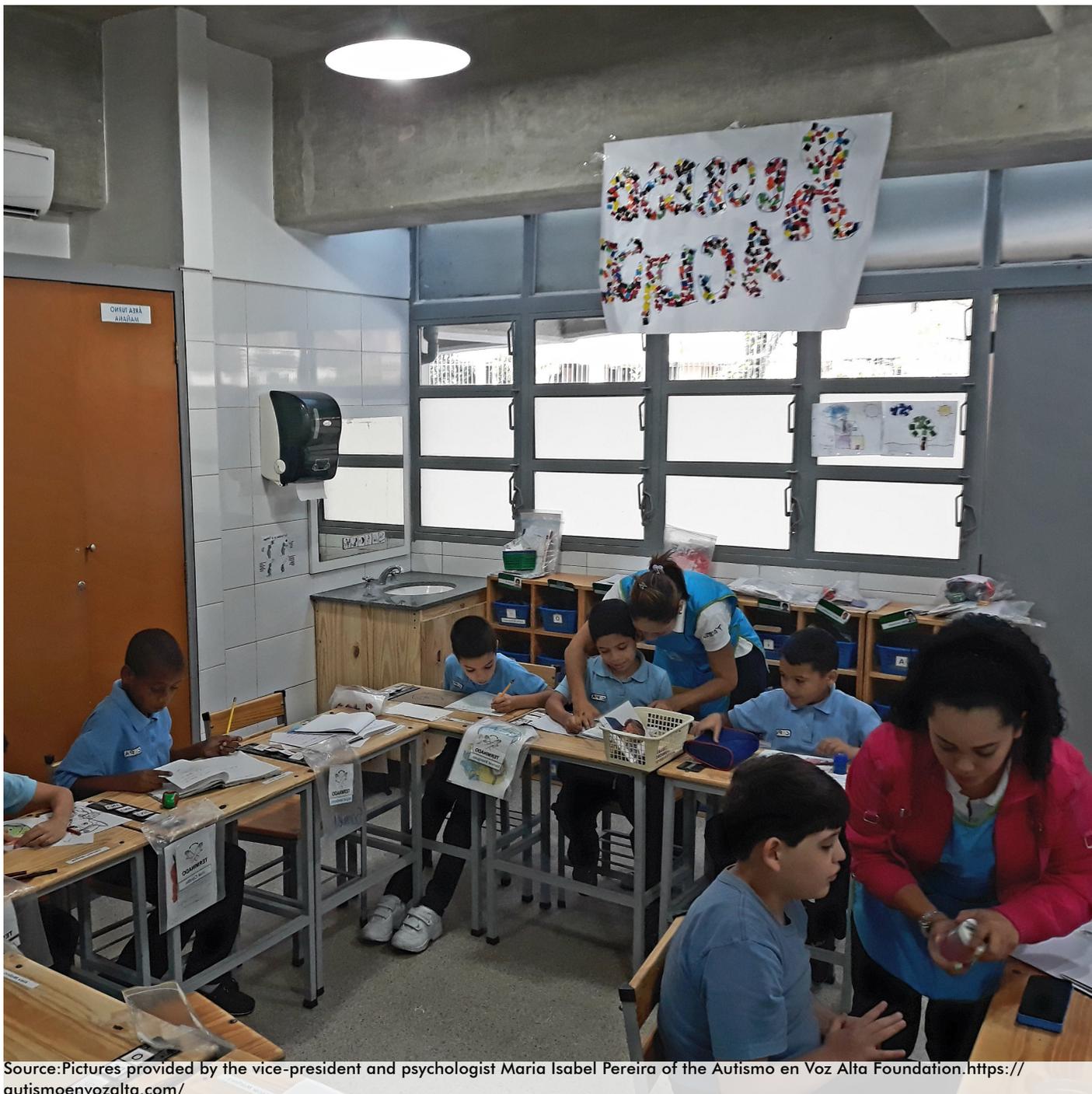


Source: Pictures provided by the vice-president and psychologist Maria Isabel Pereira of the Autismo en Voz Alta Foundation. <https://autismoenvozalta.com/>





Source: Pictures provided by the vice-president and psychologist Maria Isabel Pereira of the Autismo en Voz Alta Foundation. <https://autismoenvozalta.com/>



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Source: Pictures provided by the vice-president and psychologist Maria Isabel Pereira of the Autismo en Voz Alta Foundation. <https://autismoenvozalta.com/>

To sum up the interview, together with psychologist Maria Isabel, we defined those elements that are considered essential to achieve a positive integration in the school spaces for childrens with autism in regular schools.

## ARCHITECTURAL ELEMENTS FOR A POSITIVE INTEGRATION

**To achieve good management of the spatial components,** it is essential to achieve a safe, predictable, easy-to-use, and distraction-free space. For this purpose, delimited and directed paths must be implemented; identification systems, through color patterns or pictograms that help the implementation of visual language, as a reinforcement of verbal language; and safety accessories, which help reduce the number of impediments in the circulation area.

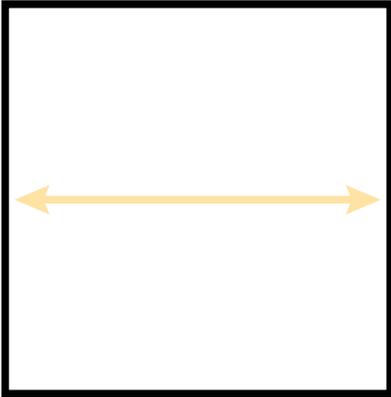
**For the spaces, specific requirements must be considered to allow adequate functioning; there must be a sound amplitude with limits and with the activities specifically located.**

The size of the rooms must be large enough for the activity for which they are intended, avoiding the overcrowding of all students.

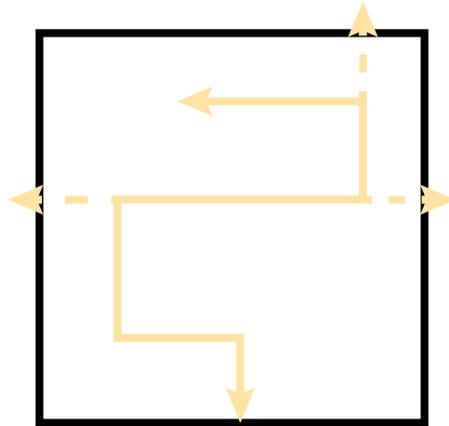
The spaces must be well delimited and organized so that the child can function autonomously, where through the furniture, pictograms, and colors, the specific functions of each space are established.

So for the child to function correctly, each space must be specific for an activity without mixing different activities in a minimal length to define their routines and not generate overstimulation in them.

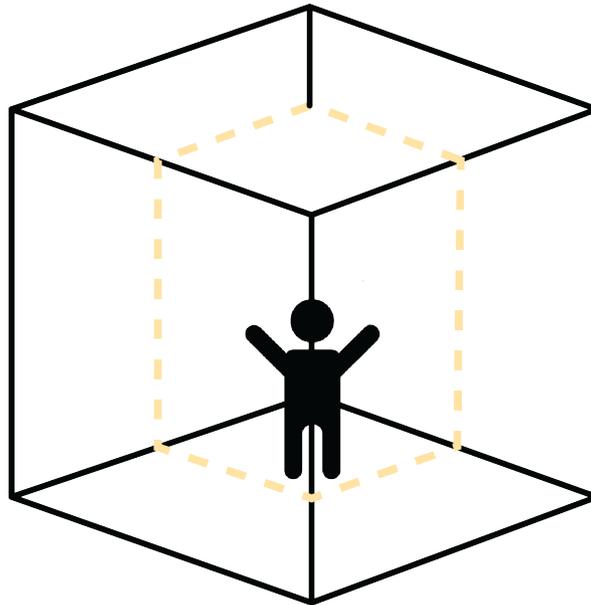
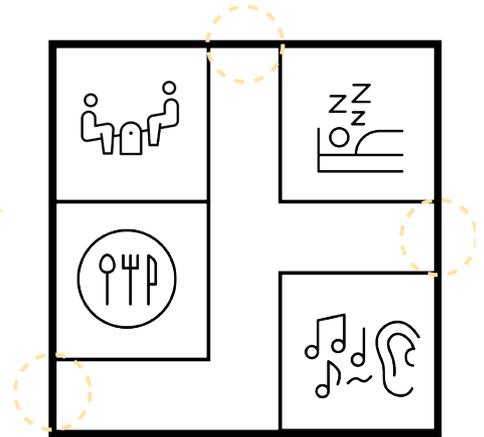
## SPATIALITY



## BOUNDARIES



## LOCATION



**The ventilation of classrooms,** it is essential to consider good ventilation because odors from poor ventilation can cause irritability in children preventing their concentration in activities.

Regarding the type of ventilation used for the spaces, the noise they may cause must be considered; it is possible to implement natural or artificial ventilation.

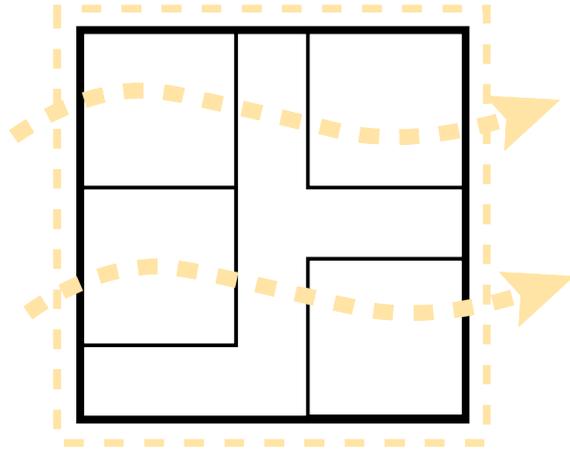
The temperatures inside the spaces should be regulated so that they contribute to the thermal comfort of the children; that is to say, if there is the use of air conditioners, these should be held between 20 and 22 °C. It should also have regulation if it is natural because the extremes would generate discomfort for the children.

**The illumination of the spaces must be variable;** it will depend on the activity generated in the area.

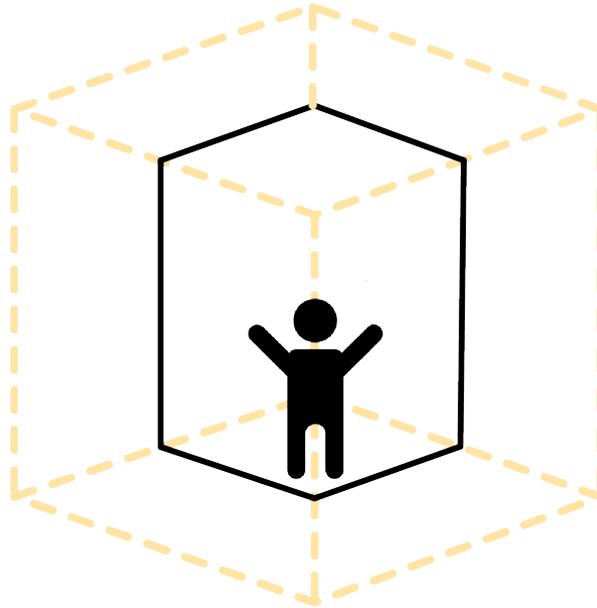
It must be controlled so as not to generate overstimulation that causes distractions, discomfort, or discomfort in children.

Regarding the use of artificial light, it is suggested to use white bulbs without any irregularity that may cause distraction, such as flickering light.

And when using natural light, it is essential to consider the possibility of generating high temperatures in the spaces, causing irritability in the students, so it must be regulated.



VENTILATION



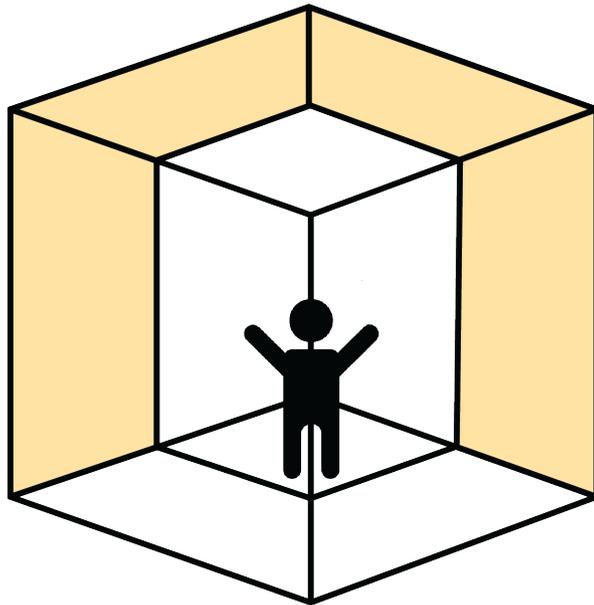
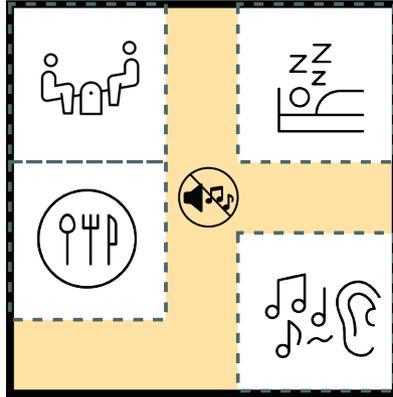
LIGHTING

**Acoustic** is a significant factor, where the thickness of glass and walls must be considered to achieve acoustic insulation in each room so that noise from one activity does not affect another or create distractions. To accommodate hearing sensitivity, ambient noise levels should be reduced as much as possible. Building systems and appliances should be designed to be quiet and increase the sound insulation of ceilings and walls.

Also, among the small details that can avoid annoying noises in the classroom are adding protection to the furniture on their bases to avoid noises that generate irritating noises when moving them.

Also, to not affect children's performance in the classroom, acoustics must be taken into account because rooms with a lot of resonance can generate behavioral irritations.

# ACUSTIC



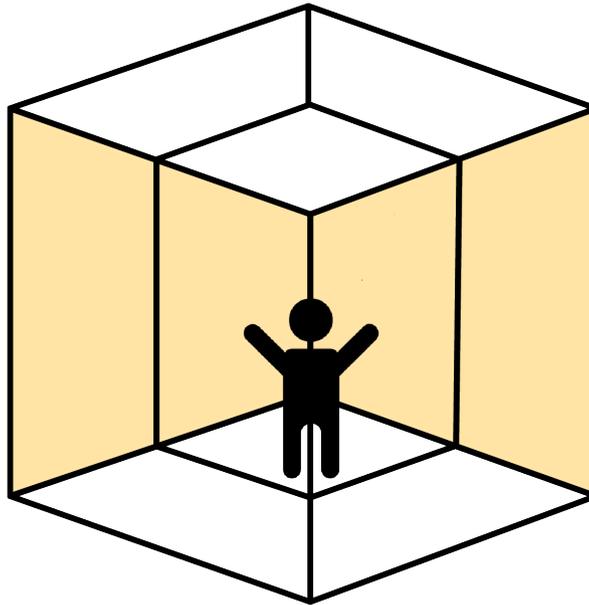
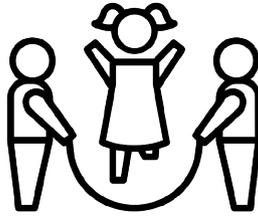
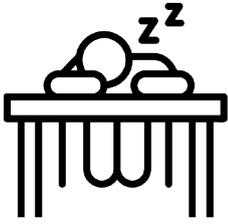
**Regarding visual orientation,** it is recommended to use a system of pictograms or graphic elements, which are essential to achieve the child's exposure and allow him to be autonomous in their routines, identifying through representative images and behavior or what to do in that particular space for that activity.

As well as the visual elements establish what activity is performed in each space, colors are also used, where each color will represent the type of behavior for each room; for example, the self-regulation areas of a school should be identified in the same color regardless of whether they are spaces with different furniture.

These instructions prevent children from getting distracted while performing their routine, quickly identifying the activity to be performed according to the color or descriptive image in the area.

It motivates the child to understand what behavior to have and thus be autonomous and facilitate the operation of the entire classroom to the teacher or tutor in charge.

## VISUAL



**The use of colors** in the spaces must be particular and controlled because they can generate overstimulation for children with autism.

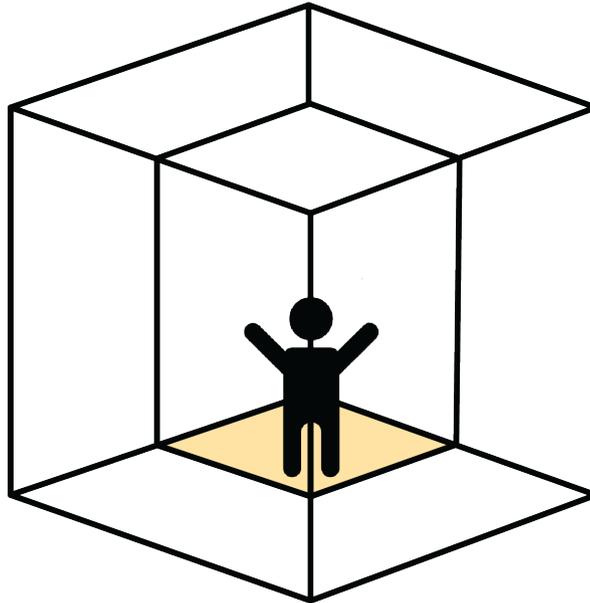
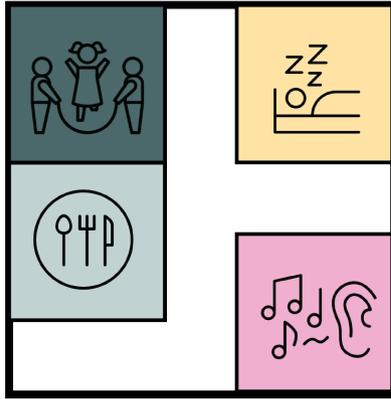
Colors should be used in a critical way, where within the classroom they should be organized specifically for each function, i.e., each specific use should be characterized by identifying with a color so that the child recognizes the activity according to the color that corresponds to it and thus will know how to behave.

In addition, these allow us to establish the necessary routes for children to follow a routine.

Each color has a meaning and generates or accompanies a behavior in individuals; for example, the blue color is a color of calm and relaxation, so it should be used for spaces where we have as a purpose the rest of the students.

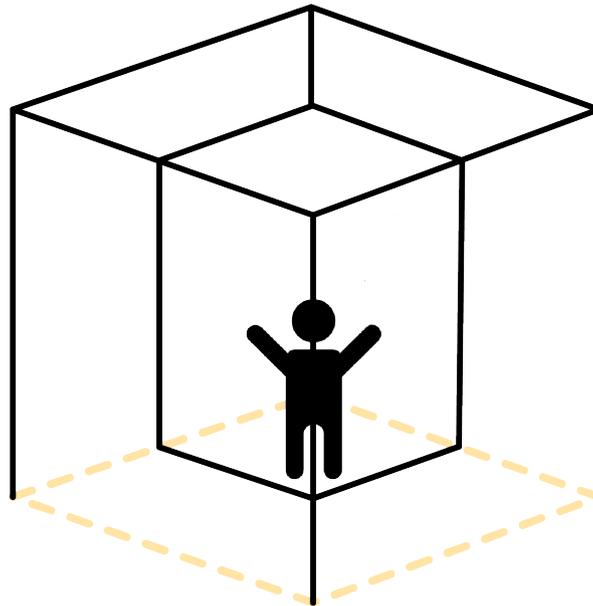
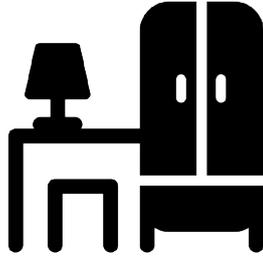
Green is a color that transmits concentration, so it should be used for spaces that require this type of characteristic.

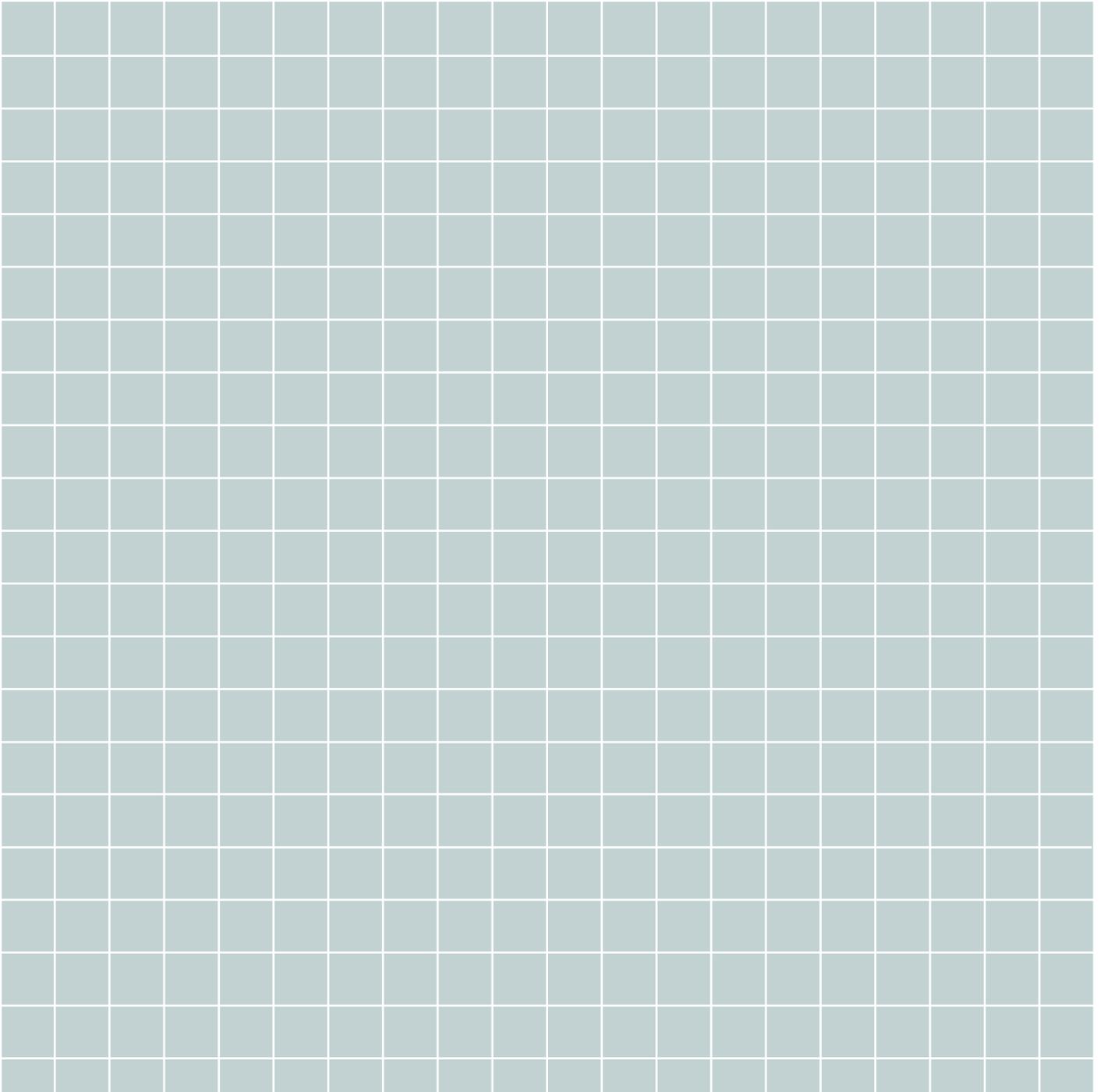
## COLORS



**The furniture** in the classroom or other spaces is a fundamental tool to generate an organization, having areas within the main room. These can be integrative, defining and organizing the spaces within the classrooms, establishing different zones. In addition to being durable and resistant to damage and use by children, the furniture materials must provide safety to children and teachers in their service through appropriate materials and protections, such as foam rubber coatings.

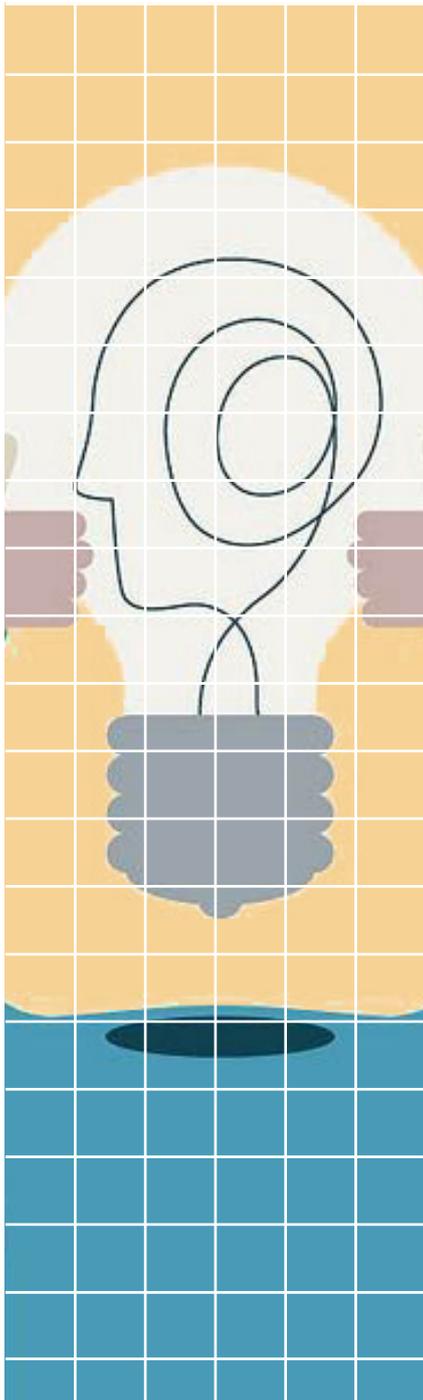
## FURNITURE





# AUTISM ITALY





## AUTISM IN ITALY

**In Italy autism according to ISTAT (Istituto Nazionale di Statistica):** *“a report on the integration of students with disabilities in primary and secondary schools, students with disabilities are estimated at 3.1%, i.e., 86,985 indirect and 66,863 in secondary schools. According to the Associazione Nazionale Genitori Soggetti Autistici (National Association of Autistic Parents), most (41.9% in primary and 49.8% in secondary) have an intellectual disability. In comparison, developmental and language disorders affect 26% and 21.4%, respectively.”* **Rachetti, B., Lorusso, E., Casalnuovo, F., Allevi, S., Corlazzoli, A., & D’Incerti, E. (2020, April 27).**

A support teacher with specific training should follow an autistic child or young person. In Italy, such teachers exist, but it is always necessary to see if there is an actual staff availability in each situation. Individual cases must always be considered because the spectrum of autistic disorders is vast: it ranges from retardation, even severe, to paranormal situations and even the “gifted.”

For example, some children and adults may have exceptional musical and pictorial skills, which allow them to reproduce on canvas landscapes they have seen only once with fantastic ability,” says the expert, “from the educational point of view, they do not

have memory problems, but problems of integration of information in the context of cognitive awareness.”

**As for the public area, the Ministry of Education (MIUR):** *“indicates a series of guidelines to promote the integration of people with disabilities, such as those with autism, ranging from support teachers, through the financing of integration projects and activities, to training initiatives for support and curricular teaching staff, and administrative, technical and auxiliary staff.”* **Rachetti, B., Lorusso, E., Casalnuovo, F., Allevi, S., Corlazzoli, A., & D’Incerti, E. (2020, April 27).**

But other actors are also involved, such as families, local health authorities, and other institutions, such as provinces or municipalities: “Support hours are guaranteed by the State, while at the local level there are those of the so-called “school education”: this is school assistance, in addition, to support and which does not have a didactic purpose, but the objective of providing a path to accompany the subjects towards greater autonomy, and therefore has a social value.

**The law for autism in Italy states:** *“that a person with a disability is a person who has a physical, mental, or sensory impairment, whether stable or progressive, which causes difficulties in learning, in relating*

*to others, or in integrating into the labor market, and which leads to social disadvantage or marginalization. Persons with disabilities are entitled to the benefits established for them about the nature and extent of their disability, their overall individual residual capacity, and rehabilitation therapies' effectiveness."* **L'accertamento dell'handicap. Handylex.org. (n.d.). Retrieved February 7, 2022.**

Suppose the disability, single or multiple, has compromised age-related personal autonomy to such an extent that permanent and constant assistance is necessary. In that case, it will be diagnosed as a problematic situation.

Problems recognized as serious determine the priority of public service programs and interventions.

This law will also apply to foreigners and stateless persons, domiciles, or stable residences in the national territory. The corresponding benefits shall be paid within limits and under the conditions provided in the legislation in force or international conventions.

**In the case of the Law of February 5, 1992, n. 104**

*"Framework Law for the assistance, social integration and the qualifying rights of persons with disabilities."*

**Beco, G. de. (2013). Article 33 of the Un Convention on the Rights of Persons with Disabilities. Brill.**

For people with disabilities, you can find this law, which says how to carry out social integration, personal assistance, materials required for the construction of spaces, and many more things, which will make the person present better environmental and social conditions in their environment.

*Article 4 of the particular statute for Trentino-Alto Adige also involves an economic reform, approved with constitutional law no. 5.*

**Alpinformatica. (n.d.). Legge Costituzionale 26 febbraio 1948, n. 5. Consiglio della Provincia Autonoma di Trento. Retrieved February 7, 2022.**

The law aims to guarantee full respect for human dignity and the rights of freedom and autonomy of the disabled person and promote their full integration into the family, school, work, and society.

The purpose of the law is to prevent and eliminate disabling conditions that impede the human person's development, generating greater autonomy and participation in the community and daily life for people with disabilities.

In addition, the law pursues the functional and social recovery of the person affected by physical, mental, and sensory impairments and guarantees services and facilities for the realization of necessary medical processes and the legal and economic protection of persons with disabilities.

## **RELEVANT ASPECTS OF THE LAW**

### **1. RIGHT TO EDUCATION AND INSTRUCTION:**

“School integration aims to develop the person’s potential with disabilities in learning, communication, relationships, and socialization.

Among the articles established in the law, we highlight the following:

-Children with disabilities from 0 to 3 years of age are guaranteed daycare centers.

The right to education and instruction of the disabled person is guaranteed in kindergartens, in regular classes in schools of all levels and universities.

-The exercise of the right to education and instruction shall not be hindered by learning difficulties or other difficulties resulting from the disability.”

### **2. SCHOOL INTEGRATION:**

“The school integration of persons with disabilities in the standardized sections and classes of schools of any level and grade and universities is carried out, without prejudice to the provisions of laws n. 360 of May 11, 1976, and n. 517 of August 4, 1977, and their subsequent amendments.

Also, through the coordinated planning of school services with health, socio-assistance, cultural, recreational, sporting, and other activities

in the territory managed by public or private bodies.

The provision to schools and universities of technical equipment and teaching materials and any other form of technical assistance, without prejudice to the individual condition of practical means and facilities for the effective exercise of the right to study.”

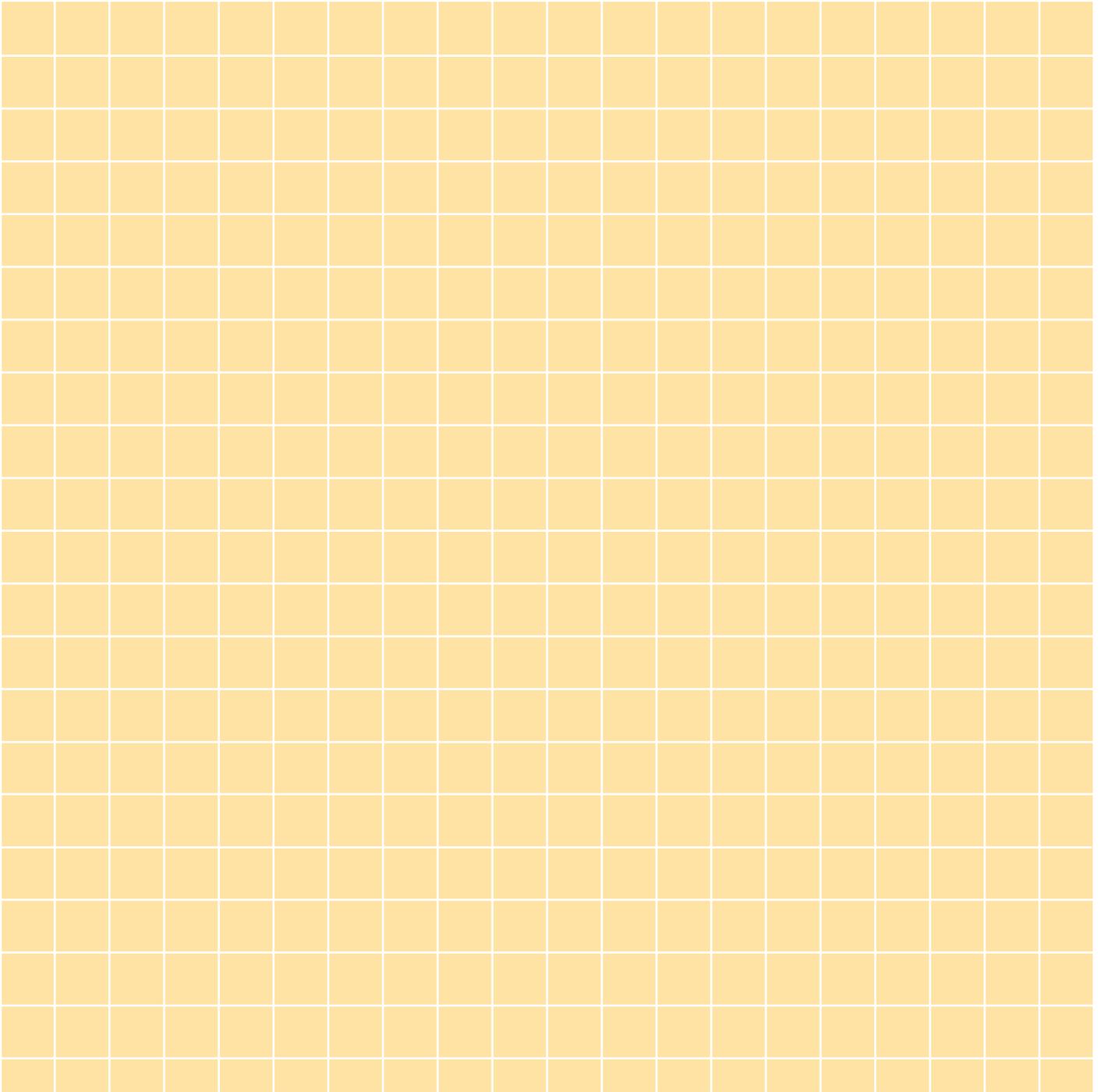
### **3. METHODS OF IMPLEMENTATION OF INTEGRATION**

“The Minister of Education shall provide training and refresher courses for teaching staff to acquire knowledge on the school integration of disabled students, by Article 26 of Presidential Decree No. 399 of August 23, 1988, in compliance with the procedures for coordination with the Ministry of the University and Scientific and Technological Research under Article 4 of Law No. 168 of May 9, 1989.”

### **4. ELIMINATION OF OBSTACLES TO THE EXERCISE OF SPORTS, TOURISM, AND RECREATIONAL ACTIVITIES.**

“The activity and practice of sporting disciplines are favored without any limitation. Using an appropriate decree to be issued within one year from the date of entry into force of this law, the Minister of Health shall define the protocols for granting the possibility of practicing competitive sports to disabled persons.”

**Note: The following aspects of the laws were taken from the following resource: Legge 5 Febbraio 1992, n. 104. Handlex.org. (n.d.). Retrieved February 7, 2022.**



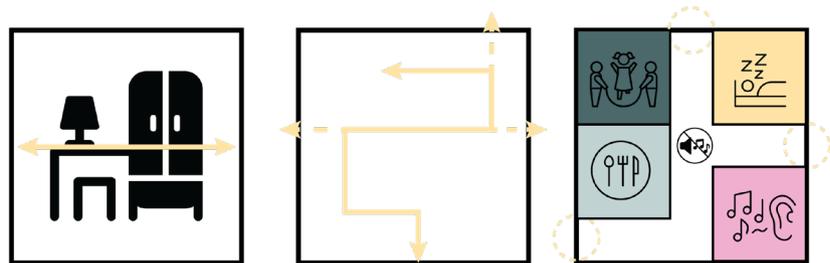
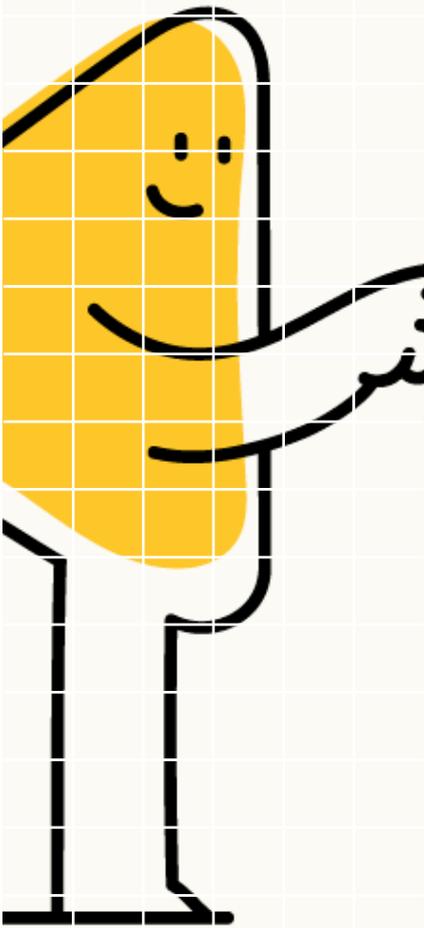
# ARCHITECTURE REFERENCES

# 03



## HOW ARCHITECTURE CAN INFLUENCE THE INTEGRATION OF CHILDREN WITH AUTISM?

Thinking about the design of spaces generally, it is possible to overlook details that may interfere with integrating a child with autism into daily activities, so it is important to consider relevant features such as **materiality, thermal comfort, lighting, spatiality.**



**The following architectural references** were selected to represent the architectural concepts that emerged from the previous study of how they affect children's behavior on the autism spectrum and the essential elements to achieving a positive integration in schools. In particular, these references show the **use of furniture as a structuring element of spaces, the use of colors and pictograms to establish the behavior for each room according to the activity, the correct use of lighting and ventilation in the areas through sustainable techniques to avoid the overload of stimuli in children and finally the materiality must be included to prevent accidents with children and that these are durable.** The selection of these references allowed us to understand how vital the mentioned aspects are and how they could be approached to apply them in the case studied.

## TEL AVIV INCLUSIVE SCHOOL

**In this architectural reference, promoting equality is an important objective where accessibility and universal design are essential pillars to achieve this pluralistic learning environment.**

To achieve the integration of students with disabilities, this school with an area of 2,000 square meters has been designed to provide accessibility and usability facilities for all equally, where 25% of the children have physical disabilities, emotional, social, or autistic problems, and interact, so the areas are designed to encourage cooperation and normalize diversity among the students.

*“This project allowed us to explore in-depth what happens when design meets pedagogy and how we can use design as a tool for social change, as a means to promote inclusion and improve the well-being of all children.”*

**explains Shani Hay the architect, it's in charge of interior and furniture design at the school.**

This architectural space features a distinctive design that encourages children to interact socially in various ways, fostering a sense of belonging and, therefore, empathy.

**It was designed with the help of experts and teachers, which allowed through architecture to generate a concept that responds to the architectural and functional needs but also the children's behaviors regardless of their disability, whether motor, social or other, allowing to transform the concept of school inclusion in an actual physical place.**

**1.** Use furniture as a structuring element of spaces and activities, tailor-made, with rooms for different functions complementing each classroom's soft and intimate corners.

**2.** Control over the use of colors, being soft tones combined with natural wood to avoid emotional overload.

**3.** The search for children's inspiration through the spaces, allowing their participation in various ways, reinforcing empathy, social skills, and learning.

It incorporates various support elements, from furniture that encourages group work to support material that allows children to learn sign language.

**Interior and furniture design: Sarit Shani Hay  
Architect: L2 Tsionov Vitkon Architects**

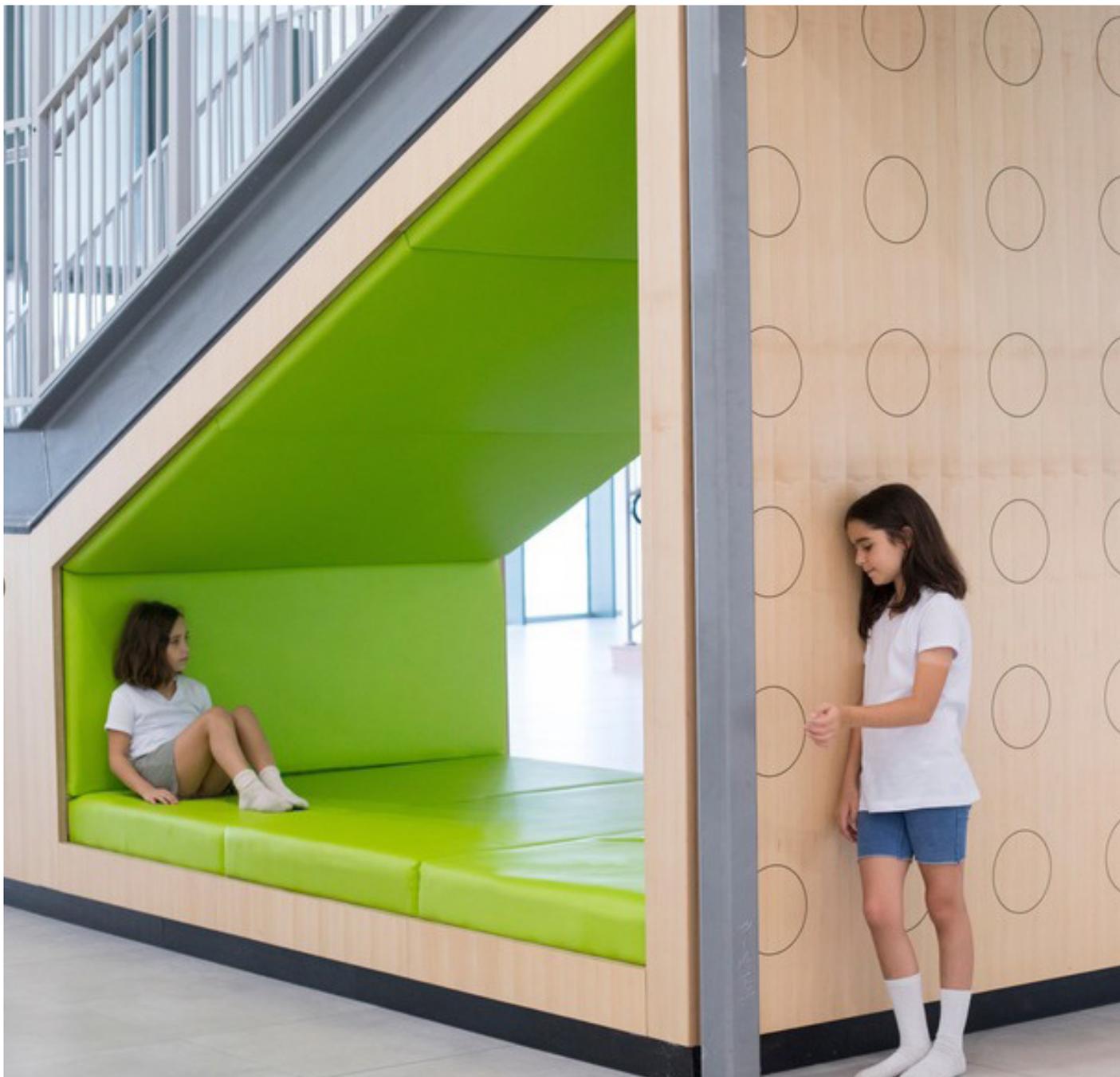


Source:2021, PROJECTS-5 January. "The First Inclusive School in Tel Aviv." Platform Architecture and Design. January 05, 2021. <https://www.platformarchitecture.it/the-first-inclusive-school-in-tel-aviv/>.



Source:2021, PROJECTS-5 January. "The First Inclusive School in Tel Aviv." Platform Architecture and Design. January 05, 2021. <https://www.platformarchitecture.it/the-first-inclusive-school-in-tel-aviv/>.





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Source:2021, PROJECTS-5 January. "The First Inclusive School in Tel Aviv." Platform Architecture and Design. January 05, 2021. <https://www.platformarchitecture.it/the-first-inclusive-school-in-tel-aviv/>.

## LIGHTING STRUAN'S NEW AUTISM CENTER

**The world's most advanced center for children with autism was inaugurated in 2005 in New Struan and designed by an architect whose daughter has autism, Andrew Lester of Aitken Turnbull, in conjunction with the Scottish Autistic Society.**

In this architectural reference, the use of light is essential because an investigation was carried out on the use and influence of fluorescent and incandescent lighting on the behaviors of children with autism in spaces, including the variations that can be generated in children depending on the lighting that exists in the area and the activity that takes place in it.

Because the lighting can influence the child's development with autism in school activities, it is a reason for distraction or irritation if it is inadequate, irregular, or flicker.

**Light for the interior spaces of the project was of paramount importance to the design, as studies strongly suggest that natural light aids cognitive abilities and improves the overall health of users with autism.**

**The goal was to create a favorable environment for the students that was influenced by the priorities of autistic individuals.**

- 1.** Curved walls: allowing to reduce the number of sharp angles, corners, and accidents with children, as well as a way to lead children from one space to another in a more subtle way.
- 2.** Glass windows in the doors allow children to visualize the next space they are swallowing them to observe, process, and assimilate the environment where they will go.
- 3.** The planned use of colors to promote feel in the building and avoid overloading the children, using colors that positively impact people with autism.

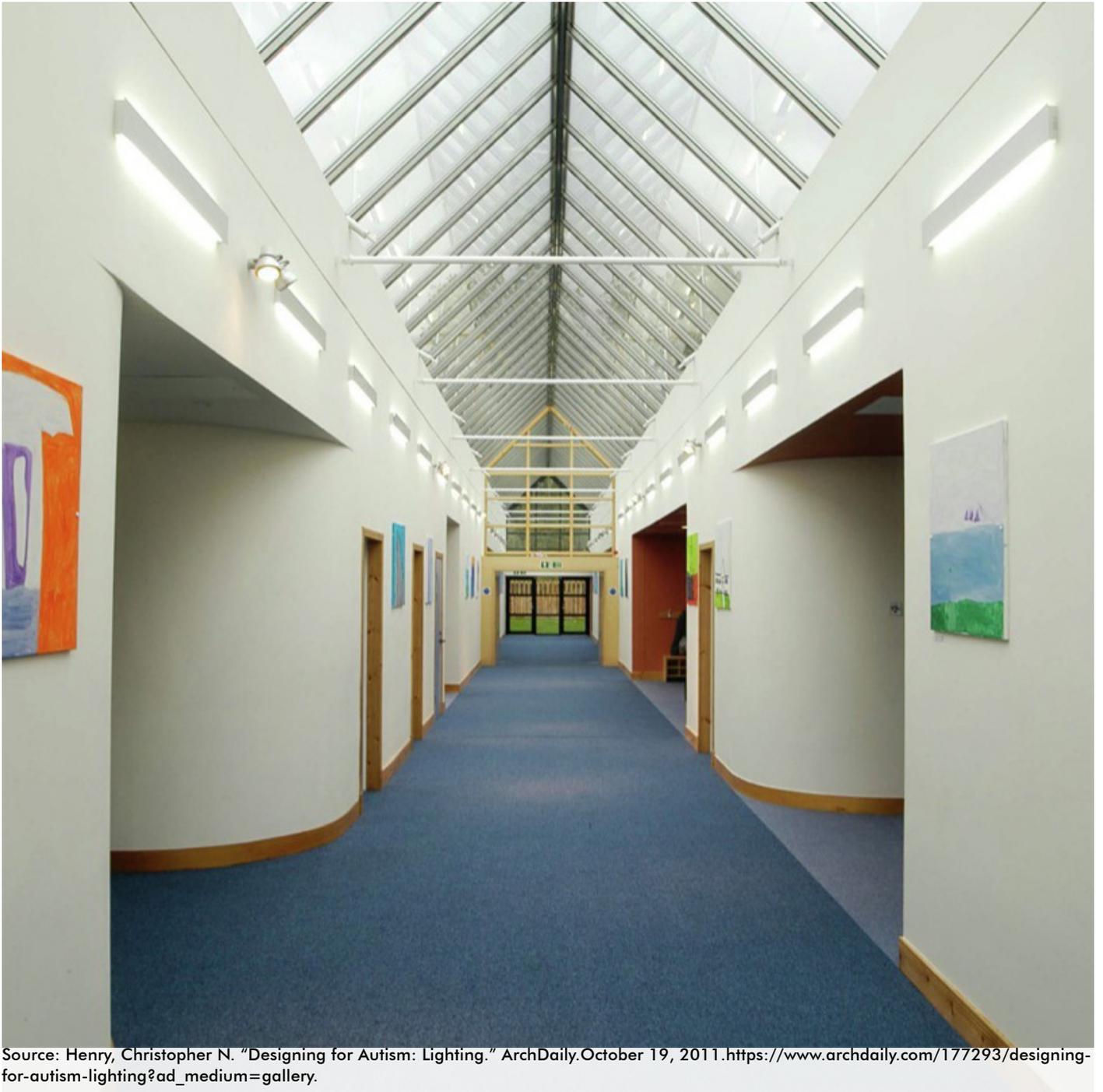


Source: Henry, Christopher N. "Designing for Autism: Lighting." ArchDaily. October 19, 2011. [https://www.archdaily.com/177293/designing-for-autism-lighting?ad\\_medium=gallery](https://www.archdaily.com/177293/designing-for-autism-lighting?ad_medium=gallery).

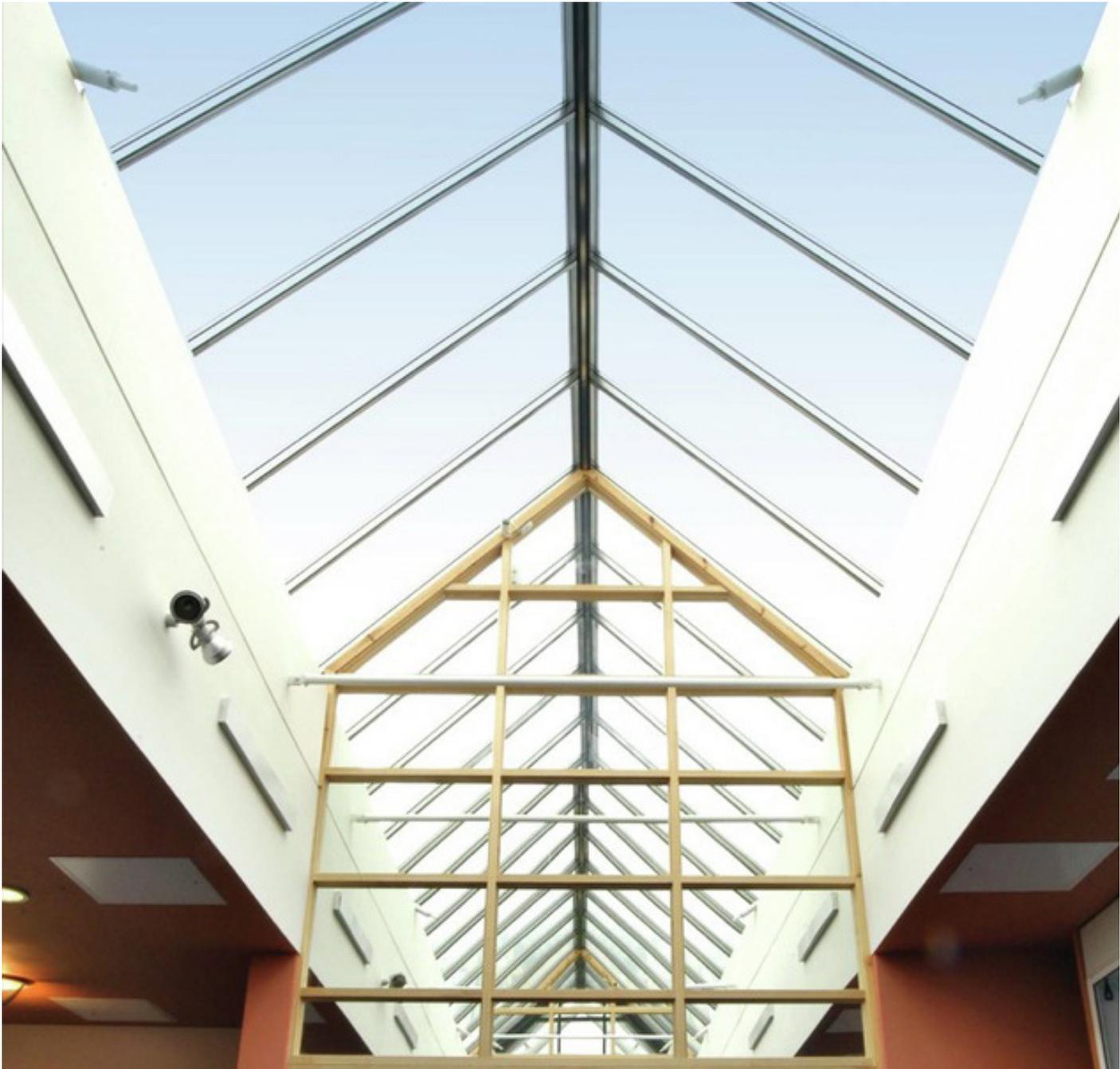


Source: Henry, Christopher N. "Designing for Autism: Lighting." ArchDaily. October 19, 2011. [https://www.archdaily.com/177293/designing-for-autism-lighting?ad\\_medium=gallery](https://www.archdaily.com/177293/designing-for-autism-lighting?ad_medium=gallery).





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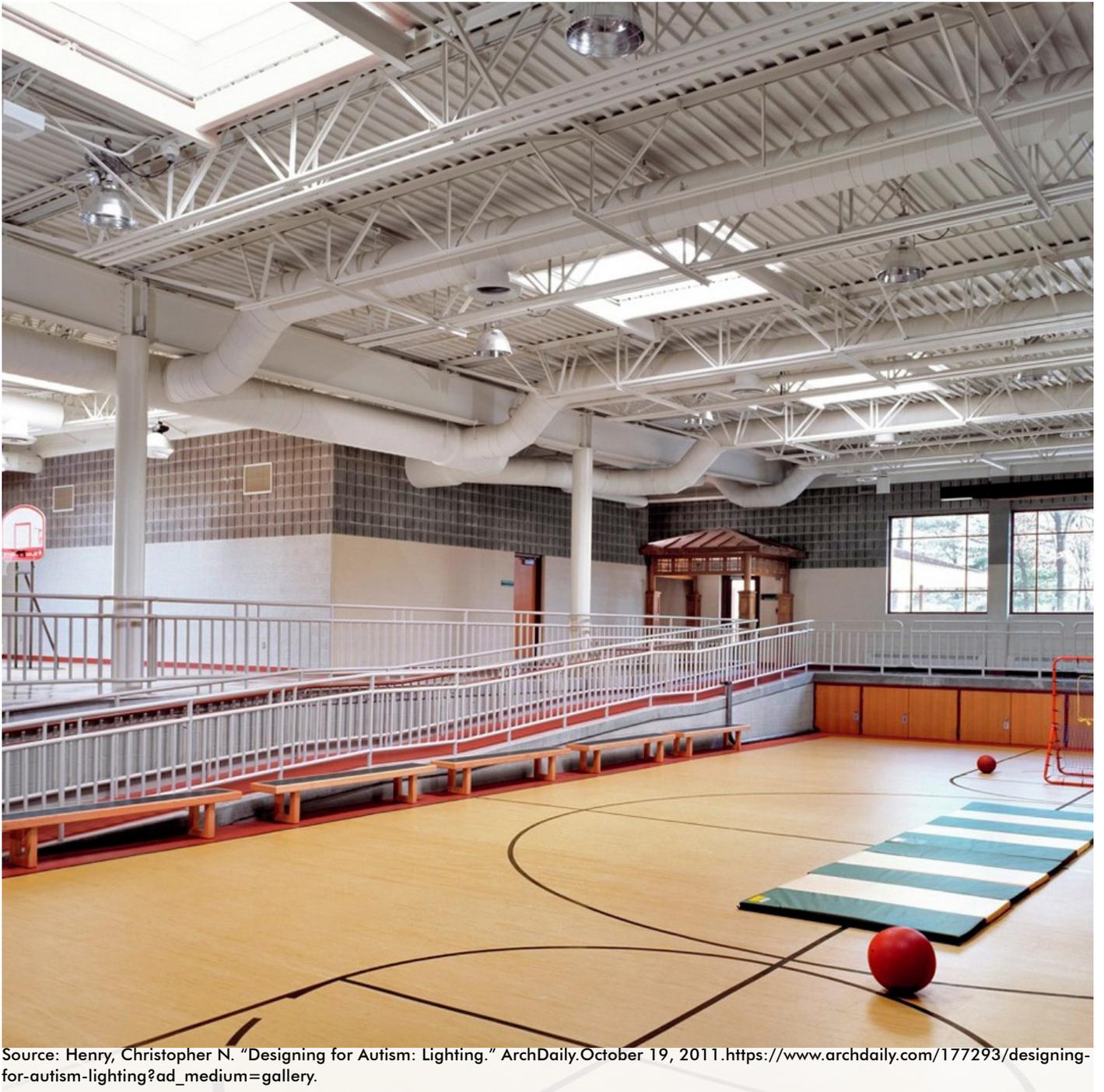


Source: Henry, Christopher N. "Designing for Autism: Lighting." ArchDaily. October 19, 2011. [https://www.archdaily.com/177293/designing-for-autism-lighting?ad\\_medium=gallery](https://www.archdaily.com/177293/designing-for-autism-lighting?ad_medium=gallery).





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Source: Henry, Christopher N. "Designing for Autism: Lighting." ArchDaily. October 19, 2011. [https://www.archdaily.com/177293/designing-for-autism-lighting?ad\\_medium=gallery](https://www.archdaily.com/177293/designing-for-autism-lighting?ad_medium=gallery).

## SWEETWATER SPECTRUM COMMUNITY

**To provide living accommodations and support for adults with autism, this architectural benchmark studied the simple universal design strategies used, creating accommodations, entertainment, and accessibility facilities for all ages and abilities.**

Reference is made to the importance of materials when designing the project, having a very rigorous selection process when choosing materials and construction systems to promote healthy indoor air quality, including acoustic control, heating, ventilation, and air conditioning comfortable and very efficient, avoiding those that can generate noise affecting the tranquility of users with autism, such as ceiling fans can be a negative stimulus for people with autism by the constant movement or some noise they can generate.

Underfloor heating and cooling with a low-velocity ventilation system were used to allow a constant temperature that does not cause irritability in the users.

The site was designed to maximize passive solar orientation light and natural ventilation, including solar photovoltaic panels and

solar hot water in the buildings. Other energy-saving strategies include high R-value insulation in walls and roofs; high-performance insulated windows; low-reflection ceilings; tubular solar lights in interior rooms; solar control where needed, with operable exterior eaves, trellises, and sunshades.

**This project aims to allow people to adapt the spaces to their particular preferences and needs, facilitating the functions above to avoid irritations in the areas where they will perform.**

- 1.** Spaces are designed to reduce sensory over-stimulation and provide a serene environment, with subdued colors, finishes, and indirect lighting.
- 2.** Various simple universal design strategies allow for generous accommodations and equal access for all ages and abilities.
- 3.** Strategies for building systems have been used to avoid creating noise or negative stimuli for people with autism.

**Colective Farm, Sonoma, United States**  
**Architects: Leddy Maytum Stacy Architects**



Source: Sánchez, Daniel. "Sweetwater Spectrum Community / LMS Architects." Plataforma Arquitectura. November 18, 2013 [https://www.archdaily.com/177293/designing-for-autism-lighting?ad\\_medium=gallery](https://www.archdaily.com/177293/designing-for-autism-lighting?ad_medium=gallery).



Source: Sánchez, Daniel. "Sweetwater Spectrum Community / LMS Architects." Plataforma Arquitectura. November 18, 2013 [https://www.archdaily.com/177293/designing-for-autism-lighting?ad\\_medium=gallery](https://www.archdaily.com/177293/designing-for-autism-lighting?ad_medium=gallery).





Source: Sánchez, Daniel. "Sweetwater Spectrum Community / LMS Architects." *Plataforma Arquitectura*. November 18, 2013 [https://www.archdaily.com/177293/designing-for-autism-lighting?ad\\_medium=gallery](https://www.archdaily.com/177293/designing-for-autism-lighting?ad_medium=gallery).



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## Kindergarten“Pablo Neruda”

**The school is conceived as a children’s construction game differentiated by colors and materials.** Access is from a previous garden where a path ascends gently into the building.

Crossing the threshold, we find a multipurpose, diaphanous space, where a series of skylights of different colors accompany the children to their classrooms. A large roof of varying thickness covers all parts of the program and houses the energy installations that the building needs.

Also, using the colors in the polycarbonate enclosures surround the blocks of the classrooms on their four sides so that the exterior and interior paint are the same, even maintaining its materiality; in this way, the importance of chromatism in this project is found both outside and inside.

*“Honoring the name of the famous Chilean poet Pablo Neruda, this nursery is inspired by literature, specifically Alice in Wonderland, a story that introduces children to the world of imagination. Thus, imagination guides the design of this building using different lighting techniques and bright colors to relate the children’s world to the adult world” ( Kotnik 2012, referring to Rueda Pizarro’s intentions).*

## Color as a strategy for the description of the architectural object.

- 1.** The project highlights the use of three colors: red, green, and blue, to establish a characteristic color for each function of the kindergarten spaces.
- 2.** The use of the climate in the interior of the building is of great importance because the internal functions were organized on that basis.
- 3.** Lighting accompanies the distribution of the spaces, so in that way, each room has adequate illumination according to the activity to be developed.

Spain, Madrid 2010  
Architects: María José Pizarro, Oscar Rueda



Source: Pastorelli, G. (2013, October 17). Pablo Neruda Nursery School / Rueda Pizarro. ArchDaily. Retrieved January 27, 2022. <https://www.archdaily.com/438561/pablo-neruda-nursery-school-rueda-pizarro>



Source: Pastorelli, G. (2013, October 17). Pablo Neruda Nursery School / Rueda Pizarro. ArchDaily. Retrieved January 27, 2022. <https://www.archdaily.com/438561/pablo-neruda-nursery-school-rueda-pizarro>

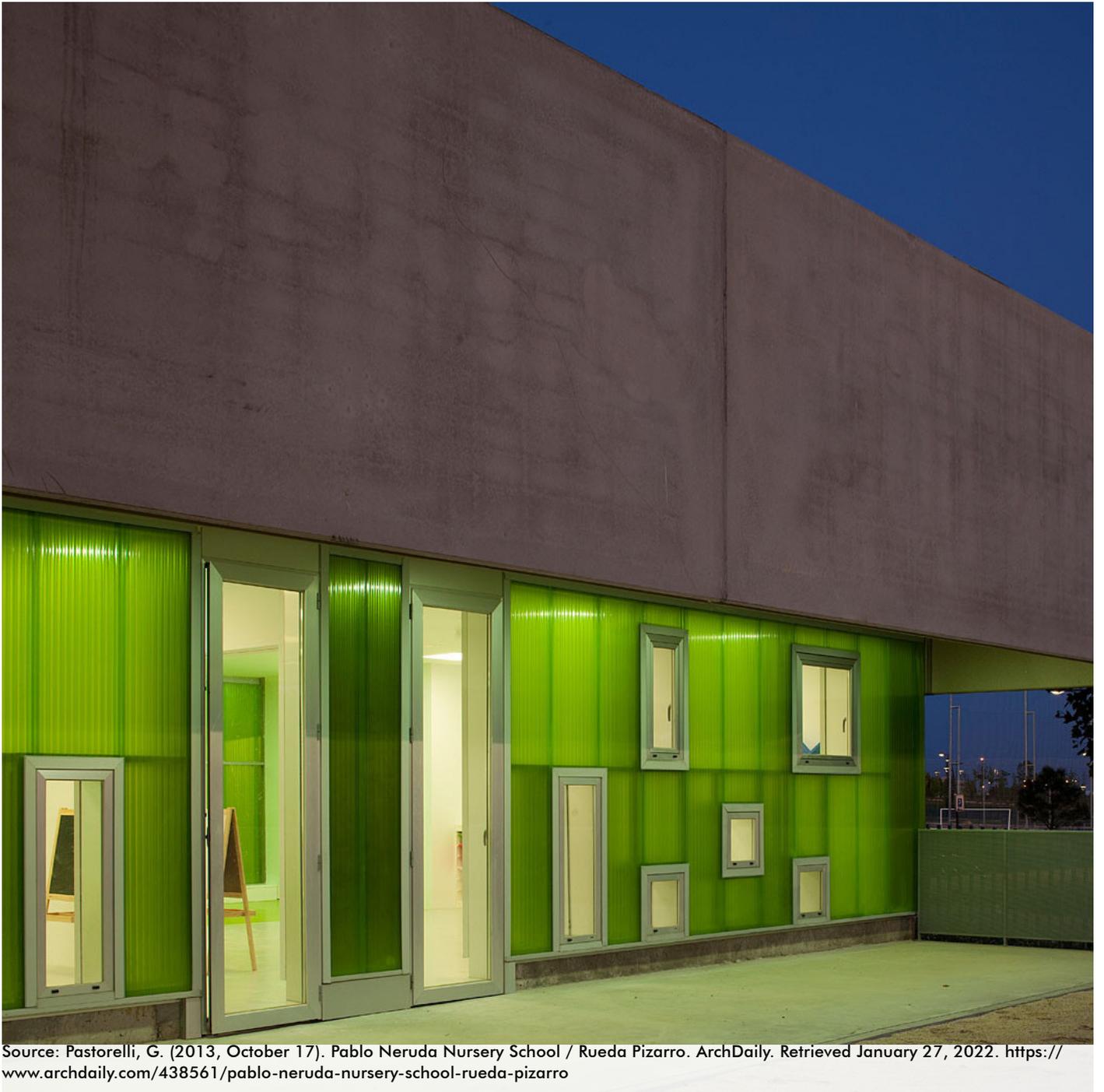


Source: Pastorelli, G. (2013, October 17). Pablo Neruda Nursery School / Rueda Pizarro. ArchDaily. Retrieved January 27, 2022. <https://www.archdaily.com/438561/pablo-neruda-nursery-school-rueda-pizarro>



Source: Pastorelli, G. (2013, October 17). Pablo Neruda Nursery School / Rueda Pizarro. ArchDaily. Retrieved January 27, 2022. <https://www.archdaily.com/438561/pablo-neruda-nursery-school-rueda-pizarro>





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## ARCHITECTURE REFERENCES CONCLUSIONS

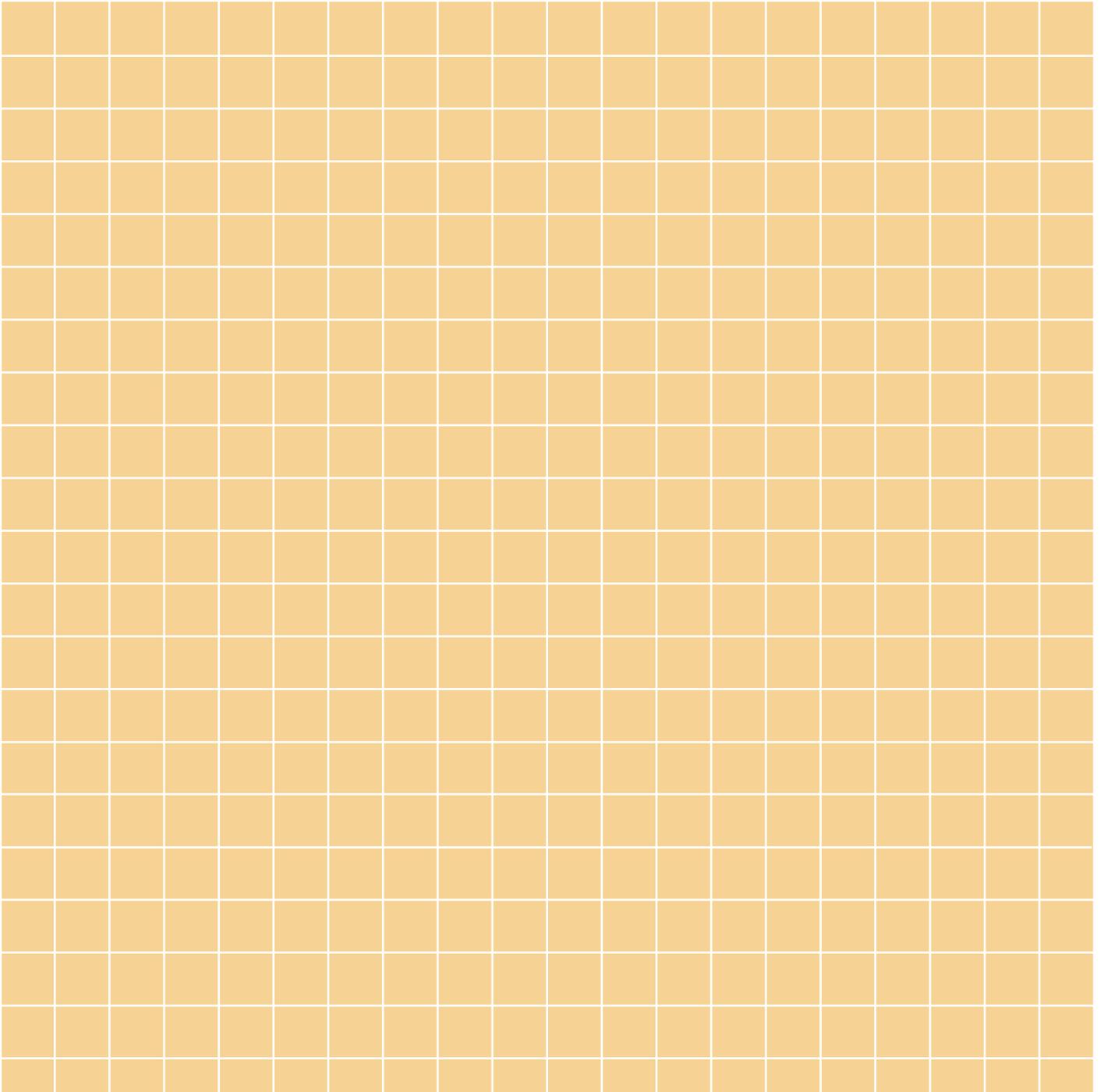
**These references found essential guidelines for the conceptual development of the case study proposal In Italy, Casale Monferrato.**

Starting from the concept of educational inclusion in an actual physical place bei organized by the furniture without a permanent rigidity, allowing flexibility according to the activity proposed by the teacher.

Because the **objective is to create a favorable environment for all equally, influenced by the priorities of autistic individuals.**

Spaces can be customized according to needs and preferences, using color as a strategy for the description of the area or architectural object.

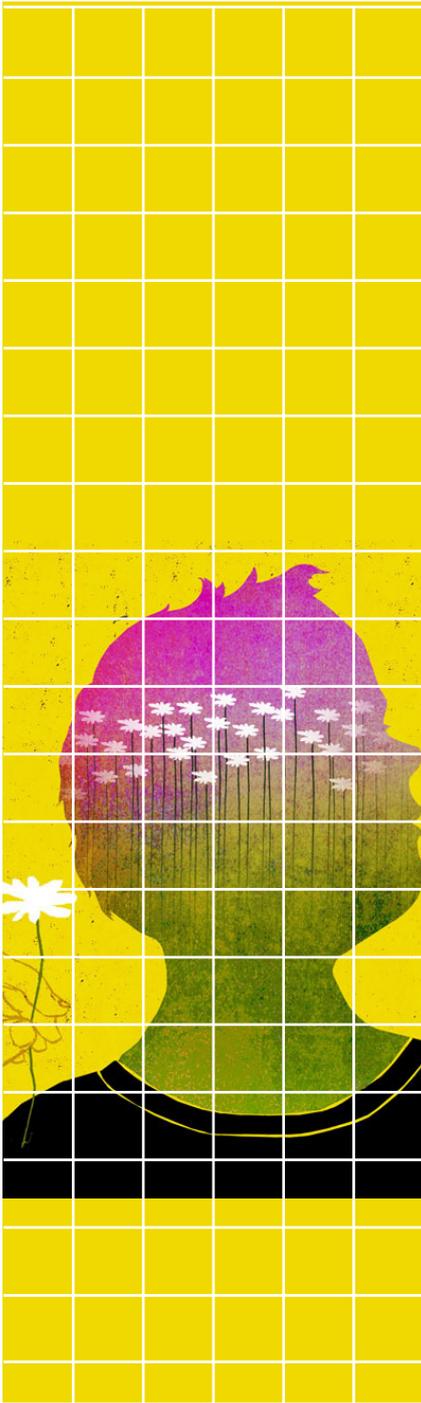
Therefore, **spatiality and its amplitude, color, furniture, materiality, ventilation, and illumination** will play an essential role, giving the perfect functioning to the spaces, starting from the existing so that the concept is as less invasive as possible and with a level of feasibility to be applied in other schools in the country.



# CASES OF STUDY

# 04





**We started with the study of two cases,** from which we understood important aspects to consider in the analysis of how the main spaces of a school should be in order to achieve a positive integration of children with autism without the need to be a special school, but to achieve inclusion in any school.

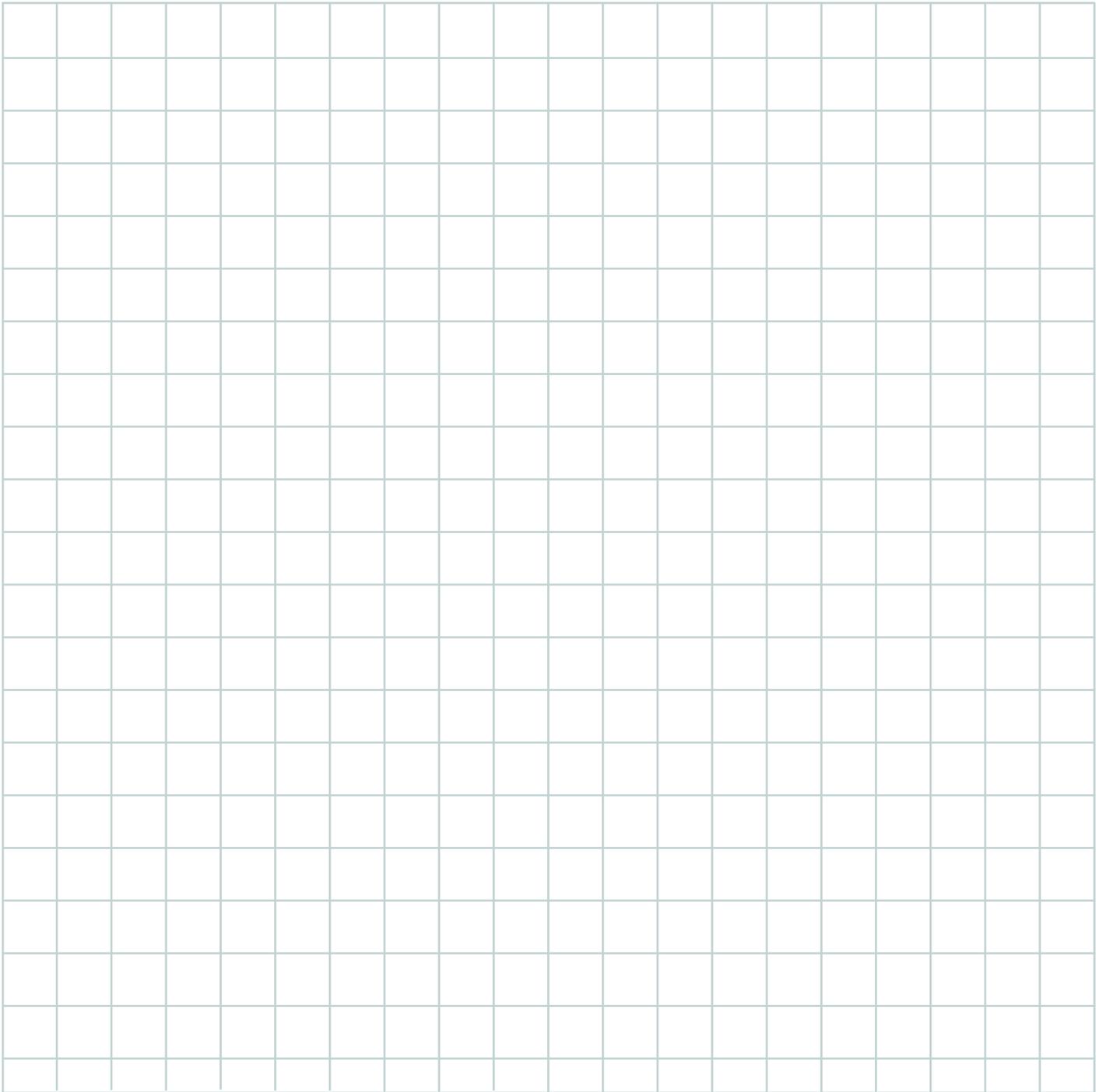
**Unfortunately, the comparison we made could not be concluded,** because we did not obtain more information about the case study in Venezuela, so we continued with the study of the school in Italy, located in Casalle Monferrato. In which we made a visit to understand how it works, how it is integrated both in terms of infrastructure and its users, students and teachers.

**CASE STUDY SCHOOL "Scuola dell' Infanzia Luzzati"**  
ITALY, CASALE MONFERRATO



Image source: provided by the teacher of the school, Paola Lupano.





CASE OF STUDY I

VENEZUELA



## DESCRIPTION

For the case study in Venezuela, we selected a school called “CEI el Principito” located in Barquisimeto.

The school has six teachers and 57 students. In September of 2022, it will merge with the initial school for 11 teachers and approximately 130 students.

It is structured with a physical plant with broad access and accessible location; it has 14 classrooms divided into two parts, second floor, and second floor, not including the multiple classrooms and the computer lab, among others.

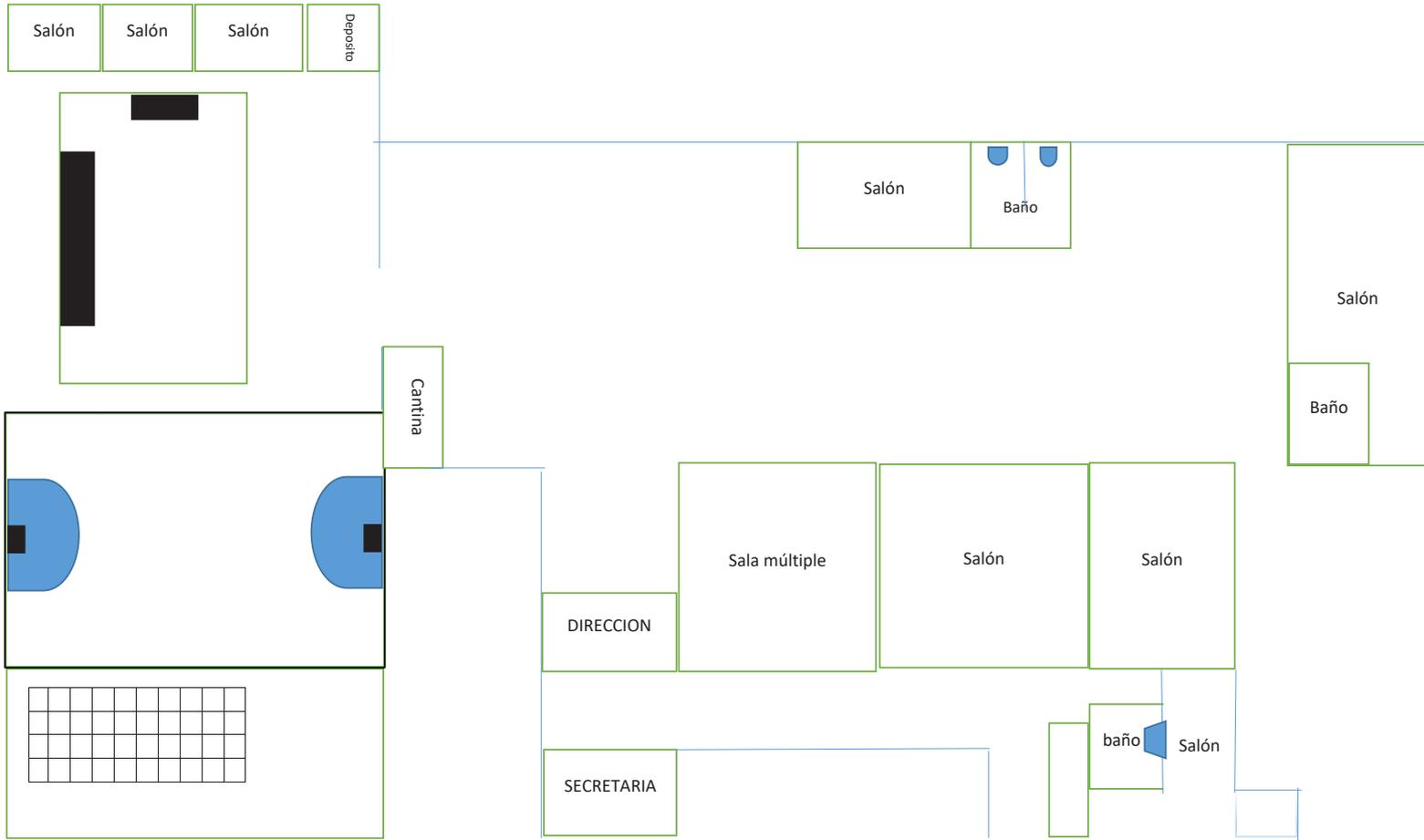
It was selected through the assistance of Child Psychologist Maria Antonieta De Oliveira because the school has the necessary characteristics to develop what was previously studied.

In the school, they have had experience with the integration of children with autism starting from the concepts of functioning of the children, being this one of the pillars of the school because they work with the integration of children with difficulties either motor, learning or social. We started with an interview with the school director, allowing us to know the functioning and structure of the school, from who integrates it, the number of teachers and students.

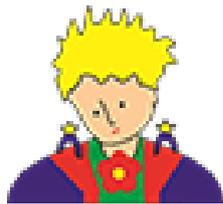
We obtained the only existing planimetry, a draft made by the owners, Mr. Gustavo Machado and Mrs. Petra Álvarez because it was previously a house adapted for its new use as a school.

Unfortunately, communication with the school was very scarce. It was not possible to continue developing the study of the school, so we decided to continue applying the proposal in the other case study.

# PLANIMETRY OF THE SCHOOL "CEI El Principito" : (without graphic scale)



This planimetry was provided by Fátima de Pereira Director of the school "CEI El Principito" **October 1, 2021**



CENTRO DE EDUCACION INICIAL  
**EL PRINCIPITO**

Teacher Fátima de Pereira Director of the school  
"CEI El Principito"

## INTERVIEW TEACHER FATIMA DE PEREIRA

Director of the school “CEI El Principito”

### Questions:

**General Description of the school:**

**- Are there any plans or any survey of the site?**

According to the information we have about it, there is a sketch of the infrastructure made by the owners of the institution (Mr. Gustavo Machado and Mrs. Petra Álvarez). (Mr. Gustavo Machado and Mrs. Petra Álvarez)

**- How many classrooms are there in the school?**

The institution has had modifications, due to the new management administration converting some laboratories into classrooms. Therefore, we can say that it has 14 classrooms divided into two parts, first floor and second floor, not including multiple classrooms and computer lab, among others.

**- How is the school’s accessibility and circulation?**

The school has a physical plant with wide and easy to locate entrances, free and unobstructed corridors, spacious classrooms, communication between classrooms, adequate furniture adapted to the grades and wide outdoor spaces. It also has a quiet playground

for leisure time and when the weather does not allow recreation. On the other hand, it has a well-organized courtyard, which in terms of space facilitates the work of surveillance and allows observing the relationship between students and the way they orient themselves. It also has stairs with handrails that communicate the ground floor with the second floor, there are signage or identification plates of the different grades (classroom, administration, management, coordination, multipurpose room and computer lab, among others). In turn, there are internal signage and basic safety signs such as: means of escape or evacuation, fire prevention and protection systems and equipment, safe area in case of earthquake, exit point in case of emergency, evacuation route-staircase, fire extinguisher alarm, ramp adapted for students with disabilities, with support bars or handrails, taking into account the law on the "Convention on the Rights of Persons with Disabilities", among others.

**- Is accessibility for all types of users taken into account?**

No, there are some access restrictions for representatives as well as for students and teachers. Because there are delimitations of areas according to the level, i.e., currently only the lower part works as primary education and the upper part is disabled. In the future, the current spaces will be given over to pre-school education and part

of the elementary school will function in the upper part, and by law both modalities must be separated.

**- How many teachers and students are there in the school?**

Currently the institution has 6 teachers and 57 students. In September next year 2021- 2022, it will merge with initial for a total of 11 teachers and approximately 130 students.

**Integration:**

**- What level of inclusion for children with autism spectrum exists in Venezuela?**

Although many years have passed since the integration of children with disabilities into regular basic education schools began, it has not been possible to achieve it in its entirety due to the shortcomings of regular schools in terms of staff training, resources and facilities. Therefore, it is necessary to make an analysis of the factors that are holding back its development in order to establish real and feasible proposals so that integration reaches inclusion and does not remain in the simple insertion of more students into regular schools without them receiving appropriate learning. Integration today continues to be an instituted but not a constituted practice, since at the time of its proposal and approval, not all the factors involved in its practice were considered. In order to improve its results, it is necessary to

update teachers, professors, contents and didactics to be used. In addition, changes in the infrastructure of the schools. The challenge lies in making education accessible, of quality and equal for all. Considering that the level from different perspectives is still very low in terms of inclusion. We are an educational institution that practices inclusive education as far as the possibilities allow us. However, we feel that we have a long way to go to make it as the meaning of the word, but we take care to provide opportunities for integration to these students so that they have equal opportunities, within the context in which we are, thus opening the essence of the human being that makes each person to be considered as unique and unrepeatable. In conclusion, although there are articles and laws that protect the active participation of these students with different abilities in society, there is very little incorporation and acceptance of this population in educational centers, even though it is a mandatory right.

**-What are the ages where people with autism spectrum have more possibilities of educational integration?**

We consider very convenient from the preschool phase, the earlier the age of entry to an educational institution, the greater the opportunity for integration of students, to provide them within the

possibilities the attention and monitoring they require and facilitate continuous guidance to parents to work as a team towards the same goal.

**-Is there integration of children with autism spectrum in the school?**

Yes, there is a small group of students who are within this population.

**-How do you manage the integration of children with autism spectrum in the classroom and in recreational activities?**

Inclusive education is promoted, that is, personalized learning tailored to a homogeneous group of students in terms of age, but attending to their individual learning needs, abilities and proficiency levels. We work together with the psychologist, tutors and teachers to adapt to the pace and difficulties in the cognitive, communicational and social level of the student, we focus on experimentation and contact with others and the environment as it is the best way to break the hermeticism and facilitate functional learning. The student's own interests are taken as a starting point, the necessary supports are provided so that he/she can carry out the activities and then they are gradually withdrawn. Very structured routines and situations are established, distracting elements are avoided in the classroom and visual aids (drawings, photos, posters) are

provided, they are located as close as possible to the classroom teacher, they are given simple orders, among others. Likewise, content adaptations or curricular adaptations are made if required by the student, taking into account the possibilities of functional development of each student, their evolution, the family and social environment and the educational context as far as possible, taking into account the differences in the level of skills and individual needs of each student from the plurality and diversity. Humanist and social values are promoted and promulgated, as it belongs to a Catholic school. Likewise, parents and representatives are given support, advice and guidance by the psychologist constantly and a quarterly meeting is planned to work with them as a group. In conclusion, reaching educational inclusion is currently a common goal for all educational systems, understanding that diversity is not a problem, but an opportunity for the enrichment of society. Here fits very well this phrase: "Unity in diversity".

**-What are the limitations or difficulties in the integration of children with autism spectrum in your facilities?**

1.- Not having sufficient resources to make all the modifications required in the facilities to assist children with disabilities, in terms of accessibility. Lack of a complete interdisciplinary team, since

autism involves several areas of development and it is important that this team participates in early detection and intervention, and thus, favor psychological support to parents and the integration of the student to school and their environment.

3.- Parents who are not very committed to participation, organization and school life.

4.- The constant training of the personnel, since not all of them are professionals in special education and many times they ask for constant help and advice to direct the mixed groups.

5.- An educational methodology focused mainly on the characteristics of the student and not so much on the contents.

6.- The restrictions of some spaces in terms of accessibility.

7.- Currently the pandemic that has influenced face-to-face education and directly affects these students who require different attention, accompaniment, follow-up and constant monitoring.

**-What would be the main characteristics that should be considered to achieve a positive inclusion?**

1. Staff with openness to the inclusive education approach, willing to invest time in the planning of their classes.

2. Participation of all members of the educational community.

3. Curricular flexibility.

4. Paying great attention to the diversity of interests, abilities, rhythms and learning needs of each individual student. Considering that we apply the theory of multiple intelligences which helps to value the student even more and work with them focusing precisely on their gifts and talents and enhance their skills or intelligences in a complementary manner.

5. Encourage the participation of parents in the following areas: school activities, support in certain learning and monitoring the progress of their children.

6. To create bonds of coexistence and tolerance among the entire educational community.

7. To have the necessary resources to meet the needs of students with or without special educational needs (SEN): support teachers, computer and didactic material, special classes to carry out some type of specific learning, although ideally the vast majority of classes should take place in the regular classroom.

8. Facilitate the diversification of teaching and the personalization of diverse learning experiences.

9. Innovation of dynamic activities and methodologies, among others.

The training of teachers for the inclusive classroom is a multifaceted process that should be initiated in the training institutions, which

implies assuming a new way of thinking about the educational process. Didactics as a reflective and explanatory discipline, with theoretical support and contextualized in practice, occupies a central role in the training of trainers, both in terms of the mastery that teachers should have, as well as the tools they should offer to students, future teachers. Success depends mainly on the willingness of practicing teachers to carry out and apply innovations in pedagogical development, considering teachers as reflective professionals of their practice who seek to favor adequate educational situations for the teaching-learning process.

**Opinions: As a teacher, school principal or representative:**

**-What is your opinion about the integration of children with autism spectrum in the school? Is it effective? Is there anything that should be changed to improve?**

Particularly, we do what we can to ensure that inclusion takes place in an adequate manner, but there are characteristics that as an institution are not fully complied with. It requires a lot of resources. However, we feel that the way we have worked so far has worked, we have obtained achievements in the students, we respect their evolutionary stages, their interests and needs. Learning at their own pace and most importantly working together within

the possibilities that are currently allowed. More than changing, it would be to incorporate an interdisciplinary team, but at the moment, economically the conditions do not lend themselves to take on so many personnel.

**-In your personal opinion, what do you think should be included in all schools so that children on the autism spectrum can enjoy their school and its spaces more?**

Sensory playroom, to stimulate students' learning through the senses, accessibility and circulation in all environments, having music therapy as a therapeutic tool. And most importantly, to sensitize and train the staff working in each school and the community.

**-What would an ideal integration school be like for a child on the Autism Spectrum?**

It is important that parents choose an educational institution that shares the values they wish to instill in their child, that is to say, that they agree on the formation of values.

Another aspect that must be taken into account is the distance from the school. The task of inclusive education implies an institutional and parental involvement; that is, its application and development concerns the authorities and teachers of the entire institution, the educational community and, within it, the parents, who are

primarily responsible for the education of their children. Therefore, parents must be actively involved in school activities. Therefore, it is good for the school to be close to home, accessible to parents in terms of time and travel, promoting effective participation. A third aspect to take into account is that parents should be aware of the school's educational project. It is important that the school has an IEP (institutional educational project) that contemplates school integration processes as educational modalities. This implies knowing the implications of integration and the procedures and attitudinal aspects to be developed in the educational community. It is essential that the school has experience in school integration and that it has professional, trained and qualified personnel who can accompany and support the student, his/her teachers and family during the integration process. Another no less important factor, which must be connected to experience and knowledge, is the real openness of the school towards the integration of students with special educational needs. That is to say, that it presents will and conviction towards the task of integration; that it bets and believes in integration. Otherwise, we will only obtain a forced inclusion, by obligation, and not a real openness.

**-What are the limitations you perceive regarding the school's infrastructure? What are the strengths you see in your school?**

**Which ones could we add?**

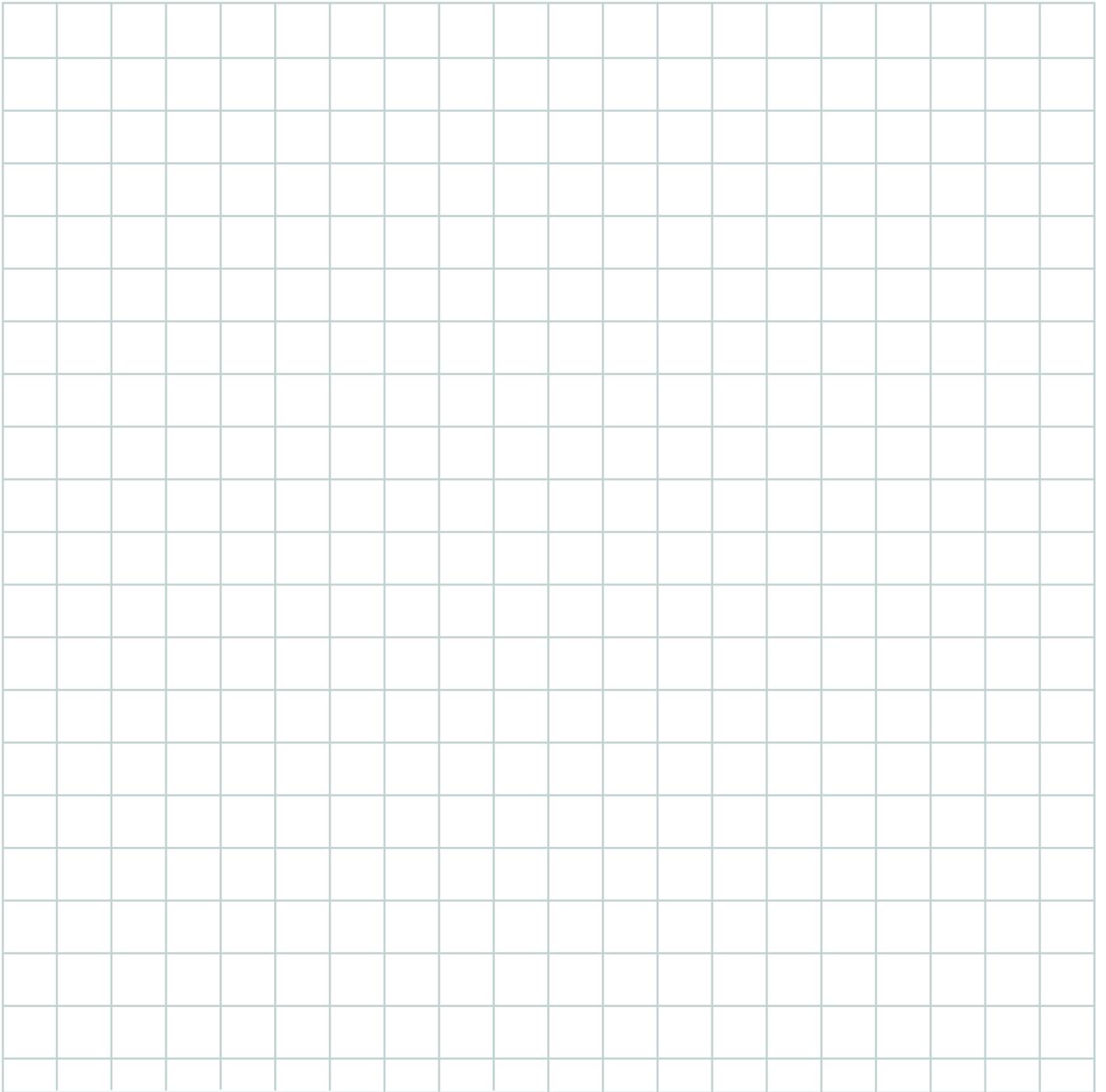
Among the limitations are the use of stairs for the initial level, outdoor spaces with many small stones, roofless court, to move to some classrooms that communicate with the court in times of rain they cannot access alone. The bathrooms are separated from the classrooms and there are students with different abilities who should not go alone, they must be accompanied and in elementary school there is only one teacher per grade.

Among the strengths we have, the location of the institution in an accessible central part, it has roads that are very accessible at the time of dropping off students, they are received by the avenue and by the street of location. Spacious and illuminated classrooms, limited enrollment of students, prepared staff, committed and trained in technology 3.0, open to the approach of inclusive education and we practice it, currently the institution has 16 students with disabilities in primary education and in early education 10 for a total of 26 students with different abilities. Another strength is to have a psychologist who constantly guides parents through the groups in terms of the needs that arise. Likewise, the institution has a Catholic approach, so it pursues a transforming model of human

and social values. On the other hand, the institution applies the theory of multiple intelligences as the recognition of the diversity of skills and abilities and expands the human potential beyond the IQ score. Therefore, it facilitates the work of students with disabilities, approaching them from their own talents and facilitating that all kinds of skills are worked on at the same time: from social skills, musical ear or creativity to motor skills, decision making, logic or problem solving. On the other hand, we are surrounded by governmental institutions that can provide support to the institution, for example: the national guard detachment in case of immediate assistance, the military circle for sporting events, the Polideportivo Máximo Vilorio, the Parque Zoológico y Botánico Bararida for environmental work, the Colegio de Abogados and the Colegio de Médicos. Also, the location of the institution has nearby health centers.

This answer have the participation of Fátima de Pereira Director of the school "CEI El Principito" and Luz Maris Sánchez Director of the Galileo Galilei School.

**June 19, 2021**



**CASE OF STUDY II**  
**ITALY**



## DESCRIPTION

For the case study in Italy, we selected the infant school of Casale, located in Casale Monferrato in the region of Piemonte. This school consists of the education of children from 3 to 6 years old with approximately 100 children.

We chose this case study with the help of our thesis director Lorenzo Savio because he facilitated the communication with one of the teachers named Paola Lupano, who has guided us in communicating all the necessary information about the school, showing us her place of work and making us see all the needs and deficiencies of the site, she guided us to have a better response to the needs of each child and teacher, she is a teacher specialized in treating children within the autistic spectrum.

The school has the necessary conditions for the experimentation of our research, where hand in hand with the teacher Paola, the psychologist specialist in children Maria Antonietta, and the teacher Lorenzo a balance is achieved to respond in all aspects necessary for the development of the project.

To improve the spaces to motivate the integration of children with autism in ordinary schools, as in the case of this school, where the integration of children with autism already exists, but the conditions of the spaces are not adequate to achieve a positive integration.



Image source: provided by the students Maria and Antonia, in the visit to Casale Monferrato, September 2021





**Paola Lupano - Support Teacher of "Scuola dell' Infanzia Luzzati" Casale Monferrato.**

Image source: provided by the teacher of the school "Scuola dell' Infanzia Luzzati" Casale Monferrato.

## **Interview Teacher Scuola dell' Infanzia**

**Luzzati:** The teacher Paola Lupano is specialized in the education of children with autism syndrome in school, she is one of the teachers in charge of this group of children, since as we have mentioned before in Italy a special teacher is assigned to each classroom in order to have a follow-up for children with this syndrome.

### **Questions:**

#### **General description of the school:**

##### **- Are there any plans or any survey of the site?**

Yes, there is a technical plan for the school project; you should request it through a letter directly to the Sindaco del Comune di Monferrato.

##### **- How many classrooms are there in the school?**

The school consists of 5 classrooms, each of which has access to individual toilets and a dining room that serves the food service for the whole school.

In addition, two classrooms were built unexpectedly to provide space for children from other schools who could not go to their school because of the pandemic.

The largest classroom in the whole school has a capacity of 23 children.

And the dormitory classroom is no longer used for this function because of the pandemic; the children rest at their desks with their pillows.

**- How is the accessibility and circulation of the school, and is accessibility for all types of users taken into account?**

The accessibility and circulation in the school are very comfortable because everything is on the same floor, and in the areas where there is a slight difference in level, there are the necessary ramps because in the school we must be conditioned to serve all children without any exception, for example, motor.

**- How many teachers and students participate in the school?**

In the school, there are children between 3 and 6 years old, and there are between 80 and 90 children, between 20 or 25 per classroom, depending on the size of the school.

And the teachers are ten teachers, two per classroom, plus three support teachers and two municipal teachers, in total 15 teachers.

**Integration:**

**- What level of inclusion for children with autism spectrum exists in Italy?**

The level of inclusion for children with autism in Italy is relatively good, only that the conditions of the schools sometimes are not

entirely correct because there are spaces, as in our case, the dining room, with characteristics that generate overstimulation in children with autism and the solution for them to calm down, is that they carry out this activity isolated from the rest, only because the space does not have the adequate conditions.

**- What are the ages where people with the autism spectrum have more possibilities of educational integration?**

- The age where they have more possibilities of integration would be when they are young because it is easier to teach or develop skills that help them relate with their peers; that is why early diagnosis is essential.

**- Is there integration of children with autism spectrum disorder at school?**

There are only one or a maximum of two children on the autism spectrum per classroom, depending on each child's level.

**- What are the limitations or difficulties in integrating children on the autism spectrum in your facilities?**

There is no good use of the school facilities because there is no classroom where the child can have a moment of rest or calm.

Another limitation is the very free spaces without any design that helps guide the child to his activity; that is to say, there are spaces

with a lack of structure.

**- What are the main characteristics that should be considered to achieve positive inclusion?**

Equal opportunities in terms of activities for all children.

**Opinion as a school teacher:**

**- What is your opinion about the integration of children on the autism spectrum in the school? Is it effective? Is there anything that should be changed to improve?**

**- What are the limitations you perceive in terms of the school's infrastructure? What are the strengths you see in your school? What could we add?**

There is a large area, the playground, that does not have any spatial design, which makes the child have too much freedom causing stress problems, and this area could be better used and structured for spaces for sports or sensory activities, among others.

There are no spaces for fun and relaxation for children; there is no space in the school used to generate an activity different from the classroom, which helps them have moments of peace and distraction. In addition, the dining room area has problems with the control of noise generated by all the children when eating.

The lack of strategic organization of spaces is the biggest problem because the school has suitable dimensions and areas, but they are not used correctly.

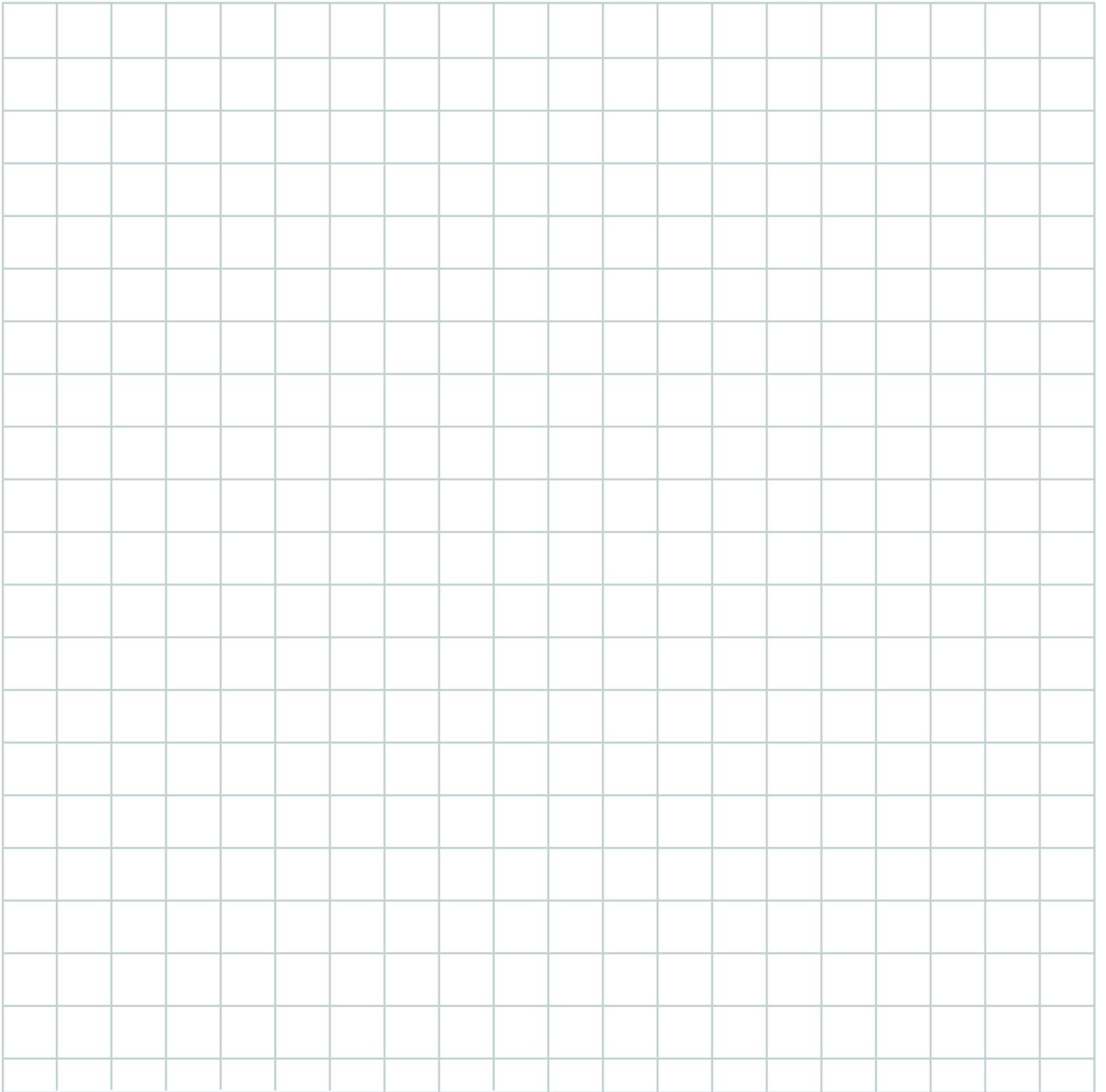
And as for what we could add, apart from a structure to the spaces that already exist, it would also be interesting to add an opening for a sensory garden, where the child can have different sensations through play.

**In the following site, you can see how the school works and the place:**

<http://www.icc3.it/scuola-infanzia-luzzati/>

<https://www.youtube.com/watch?v=Z0jROH9gLdl>

**July 26, 2021**





**CONTEXT SCALE**  
**ANALYSIS**



**Casale Monferrato** is an Italian town in the Piedmont region in the province of Alessandria. It is located at the foot of the Monferrato Mountains and is characterized as a city surrounded by many green areas. It also has many agricultural production areas, with a favorable location, as it is close to the capitals of Vercelli, Alessandria, Asti, and Novara.

But it also has a deficit of connection with other important cities, which decreases tourism in this area, since it is impossible to reach directly by train, for example, Turin.

On the other hand, it has a great history and a lot of religious cultures, wherein the historic center and the rest of the city there are several churches and chapels full of history. It is a small city, but with a lot of tourist potential, in terms of art, history and food like other cities in Italy.

**This chapter begins** with a description of the project, starting from the school's location, which gives way to an urban analysis of the site, where all the strengths and weaknesses of the school in terms of uses, environment, mobility, and urban facilities that surround it are observed. In addition, an analysis is made of the green structure of the area where you can see what kind of trees we have and how many parks are around. With these analyses, we begin to have an idea of the context of the project that will later help us generate more specific strategies.



Image source: Monferrato On Tour. (n.d.). Casale Monferrato. Monferrato On Tour. Retrieved January 26, 2022, from <https://www.monferratontour.it/it/itinerario/casale-monferrato>



**LOCATION**  
SCUOLA DELL'INFANZIA LUZZATI



**EUROPE**  
ITALY



**ITALY**  
PIEMONTE



**PIEMONTE**  
CASALE MONFERRATO

# SCUOLA DELL'INFANZIA LUZZATI

Via Rosselli, 30, 15033 Casale Monferrato AL



Image source: provided by googlemaps

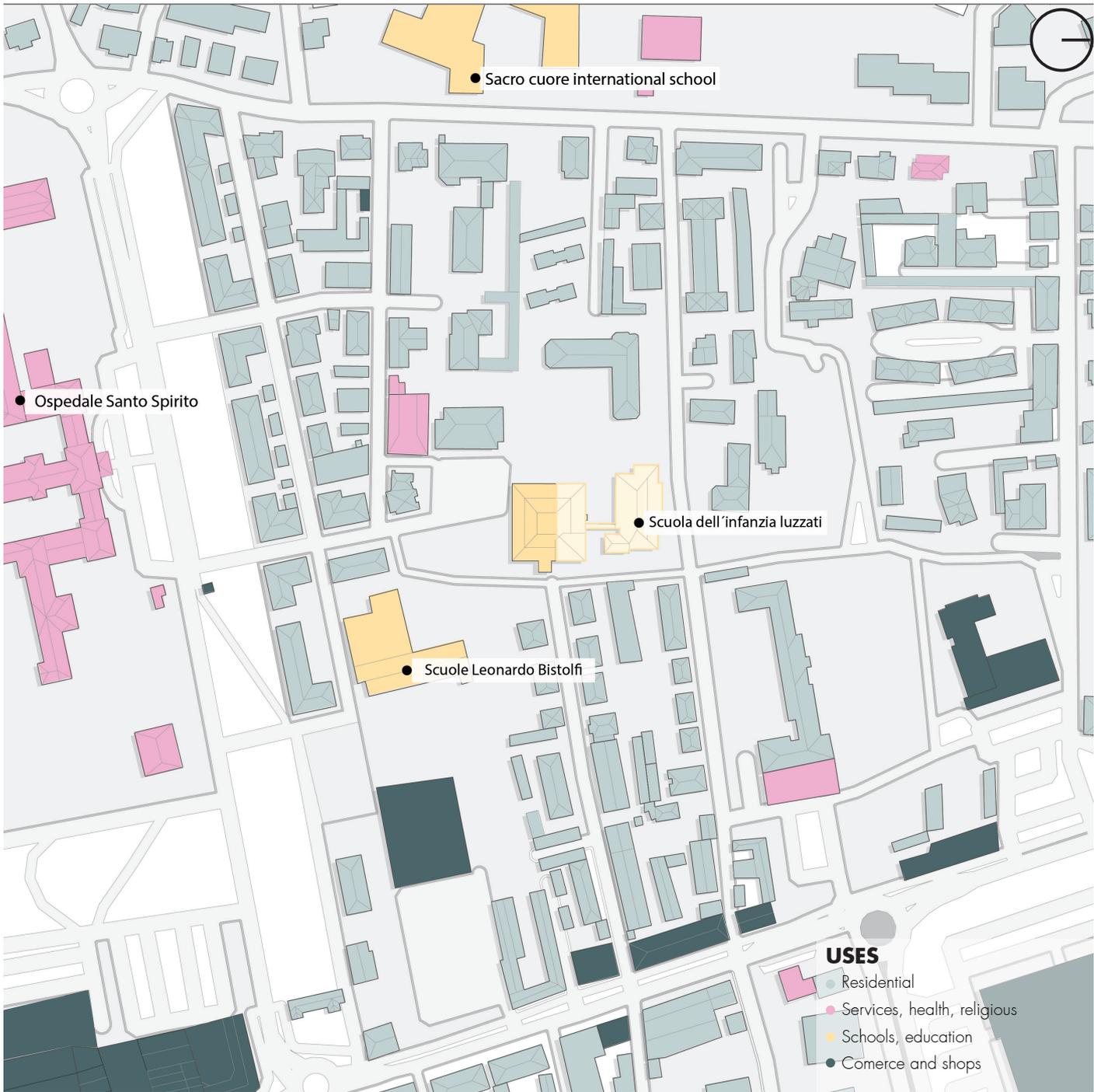


## URBAN ANALYSIS

### USES ANALYSIS:

In this first analysis we can observe the uses of the school area, all the educational, transportation, hospital, commercial and residential services. With this analysis we see how the school is located in an area of casale which presents a good response to all the necessary and basic requirements for the school, we have connection with schools that are for older children which does not allow to generate links for children as they grow up, it is a quiet and suitable area as it is also located in a mainly residential area.

We have two important buildings in the sector which is the Santo spirito hospital which is one of the main hospitals in Casale, the second important building we have is the Leonardo Bistolfi school which is a school for children over 6 years old where they have their primary and secondary education.



● Sacro cuore international school

● Ospedale Santo Spirito

● Scuola dell'infanzia luzzati

● Scuole Leonardo Bistolfi

**USES**

- Residential
- Services, health, religious
- Schools, education
- Commerce and shops



## **ANALYSIS OF GREEN AREAS AND ACCESSIBILITY:**

These two analysis we decided to do them together since for us it was important to see how was the mobility and the relation of the green areas in our working area since they are the most frequented areas by the children with the parents when in their free time, here we can see that the school is located near to one of the main streets of casale which is the one that connects between cities of piemonte, we can also analyze that we have bus stops near our school and the accessibility to this point is very easy either by public transport, private transport or on foot, as we saw in the analysis of past uses it is very likely that parents live near the school as it is a predominantly residential area, we can also see that the scale of the city of casale is a scale mostly walkable as everything is close. As for the green areas, it is a working area that presents important green areas which generate safe play spaces for children, below we can find the types of trees that predominate in this place.



## **MAIN TREE SPECIES, CASALE MONFERRATO:**

In this first analysis we can observe the uses of the school area, all the educational, transportation, hospital, commercial and residential services. With this analysis we see how the school is located in an area of casale which presents a good response to all the necessary and basic requirements for the school, we have connection with schools that are for older children which does not allow to generate links for children as they grow up, it is a quiet and suitable area as it is also located in a mainly residential area.

We have two important buildings in the sector which is the Santo Spirito hospital which is one of the main hospitals in Casale, the second important building we have is the Leonardo Bistolfi school which is a school for children over 6 years old where they have their primary and secondary education.



Fig 1

CASTANO INDIA



Fig 2

MAGNOLIA



Fig 3

SICOMORO



Fig 4

ALBIZIA



Fig 5

ABEDUL



Fig 6

ROBLE



Fig 7

HAYA



Fig 8

DAVIDIA INVOLUCRATA



Fig 9

OLMO



Fig 10

MACLURA OSAJE



Fig 11

LIRIODENDRON

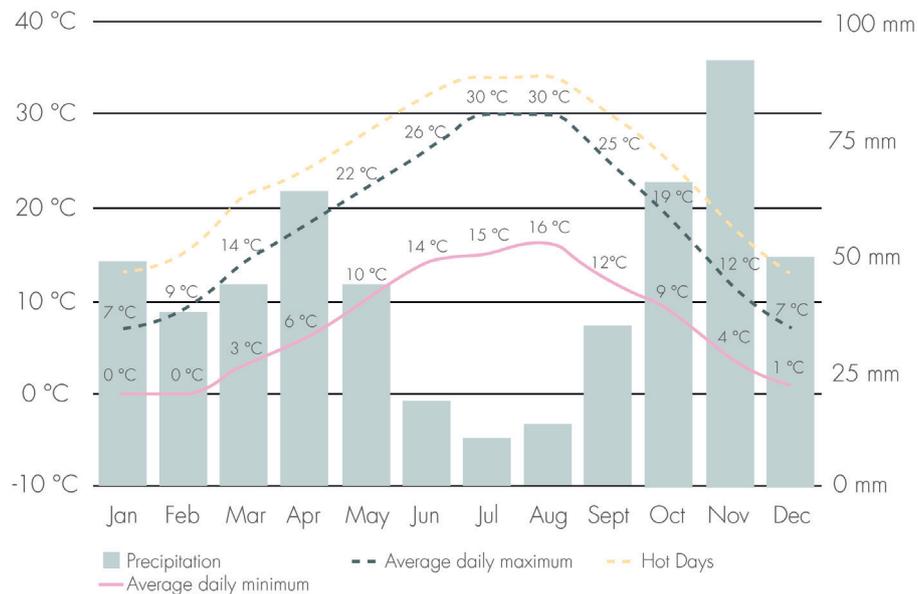


Fig 12

TILO

## AVERAGE TEMPERATURES:

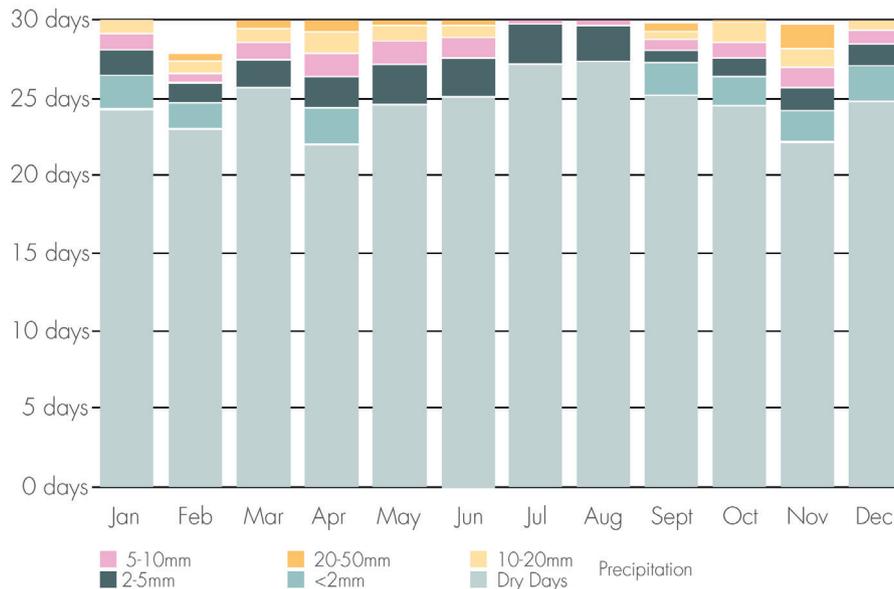
In this graph we can understand the temperature variations in the area, starting from the “average daily maximum” and the “average daily minimum” showing the average daily temperatures for each month of Casale Monferrato. We observed the average of the hot days showing the average of the hottest day of each month. Concluding that the hottest months of the year would be July and August, having a variation between 30 and 16 degrees approximately. And the coldest months of the year would be January and December with a variation from 7 to 0 degrees. The month with the highest rainfall is November and the month with the lowest rainfall is July. The monthly precipitations that go above 150 millimeters are mostly humid, and below 30 millimeters are mostly dry.



Source: [https://www.meteoblue.com/es/tiempo/historyclimate/climatemodelled/casale-monferrato\\_italia\\_3180208](https://www.meteoblue.com/es/tiempo/historyclimate/climatemodelled/casale-monferrato_italia_3180208)

## AVERAGE PRECIPITATION:

The rainfall diagram for Casale Monferrato shows the variation over a month and not just the monthly totals; we offer the cumulative rainfall over 30 days. Casale Monferrato has considerable monthly rainfall variation by season. The analysis shows how many days per month specific precipitation amounts are reached. Where they are present even during the driest month of the year. The month with the highest number of rainy days is May, and the month with the lowest number is January. I have at least 12 to 5 rainy days, depending on the month.

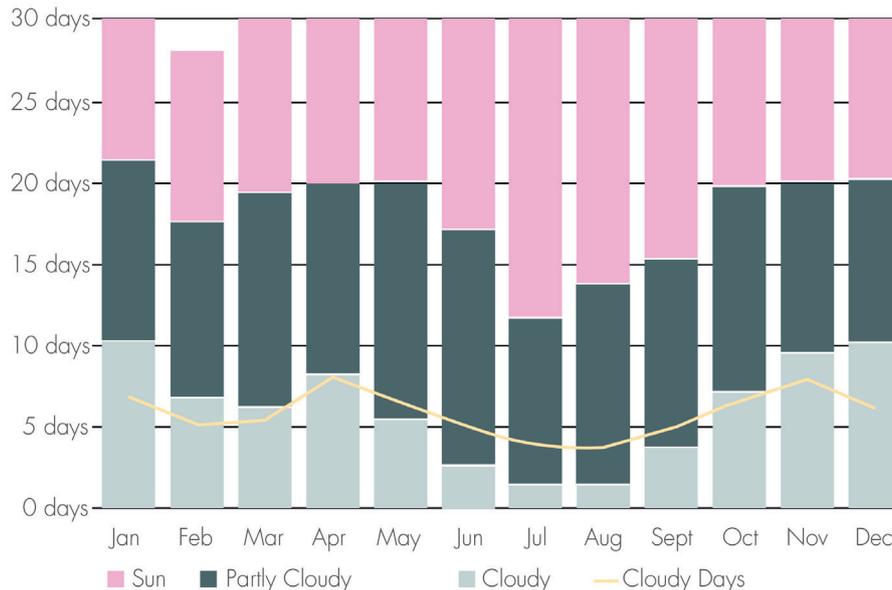


Source: [https://www.meteoblue.com/es/tiempo/historyclimate/climatemodelled/casale-monferrato\\_italia\\_3180208](https://www.meteoblue.com/es/tiempo/historyclimate/climatemodelled/casale-monferrato_italia_3180208)



## CLOUDY SKIES, SUNSHINE AND PRECIPITATION DAYS:

In the graph, we observe the behavior of sun and cloudy days; the month with more sunlight per day is July, with an average of 12.15 hours, being the month with the most hours of sun, in total, and the month with the least daily hours of sunshine is January, with an average of 4.07 hours of sun per day. The shortest day in winter is December 21, with 8 hours and 45 minutes of daylight, and the longest day is February 28, with 11 hours and 5 minutes of daylight. As for cloudiness, it gradually decreases in winter, and the percentage of time that the sky is cloudy or primarily cloudy decreases from 52% to 44%. The clearest day of the winter is February 28 and the cloudiest day of the year is November 24; the probability of overcast or mostly cloudy skies is 53%, while on July 21, the clearest day of the year, the chance of clear, mostly clear or partly cloudy skies is 77%.

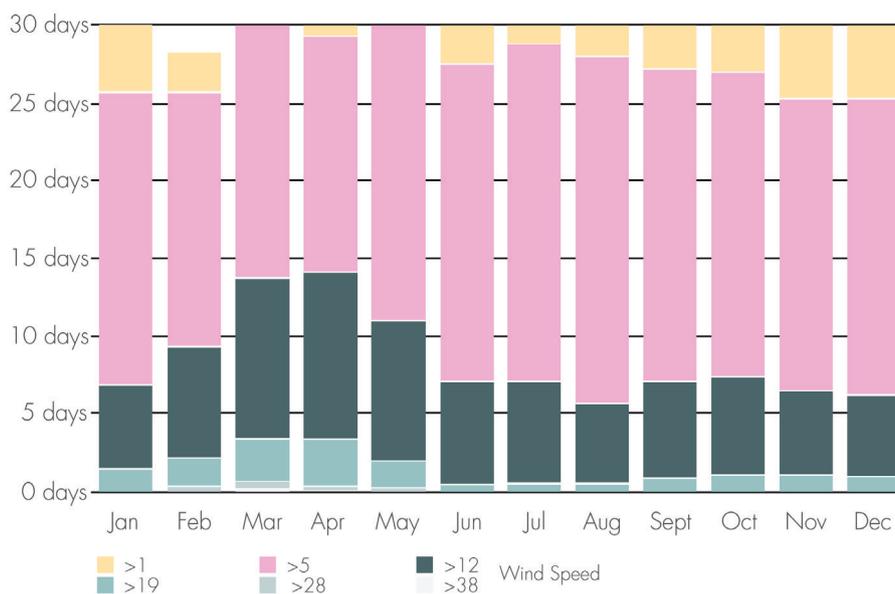


Source: [https://www.meteoblue.com/es/tiempo/historyclimate/climatemodelled/casale-monferrato\\_italia\\_3180208](https://www.meteoblue.com/es/tiempo/historyclimate/climatemodelled/casale-monferrato_italia_3180208)

## WIND SPEED:

The diagram shows the days per month when the wind reaches a certain speed. The average hourly wind speed in Casale Monferrato increases during the winter, rising from 6.4 kilometers per hour to 8.1 kilometers per hour during the season.

For reference, April is the windiest month of the year; the average daily wind speed is 8.8 kilometers per hour, while in December, the average daily wind speed is 6.3 kilometers per hour. In the winter, the wind direction in Casale Monferrato is predominantly from the north.

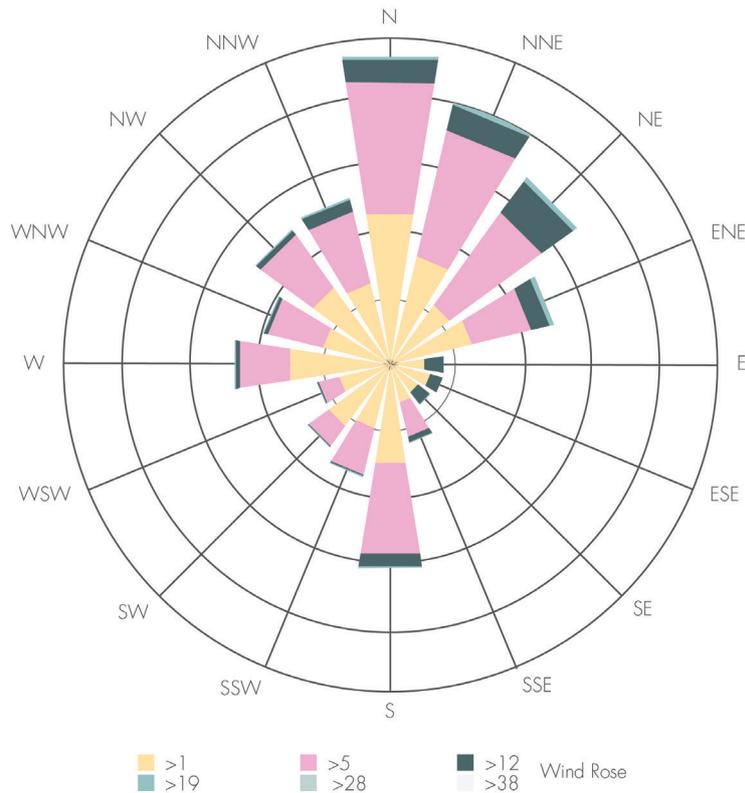


Source: [https://www.meteoblue.com/es/tiempo/historyclimate/climatemodelled/casale-monferrato\\_italia\\_3180208](https://www.meteoblue.com/es/tiempo/historyclimate/climatemodelled/casale-monferrato_italia_3180208)



## COMPASS ROSE (WIND):

The Wind Rose for Casale Monferrato shows the number of hours per year that the wind blows in the indicated direction. The average hourly prevailing wind direction in Casale Monferrato varies during the year. The most frequent wind comes from the east for 9.9 months, from January 25 to November 21, with a maximum percentage of 47% on October 4. The most frequent wind comes from the north for 2.1 months, from November 21 to January 25, with a maximum percentage of 36% on January 1.

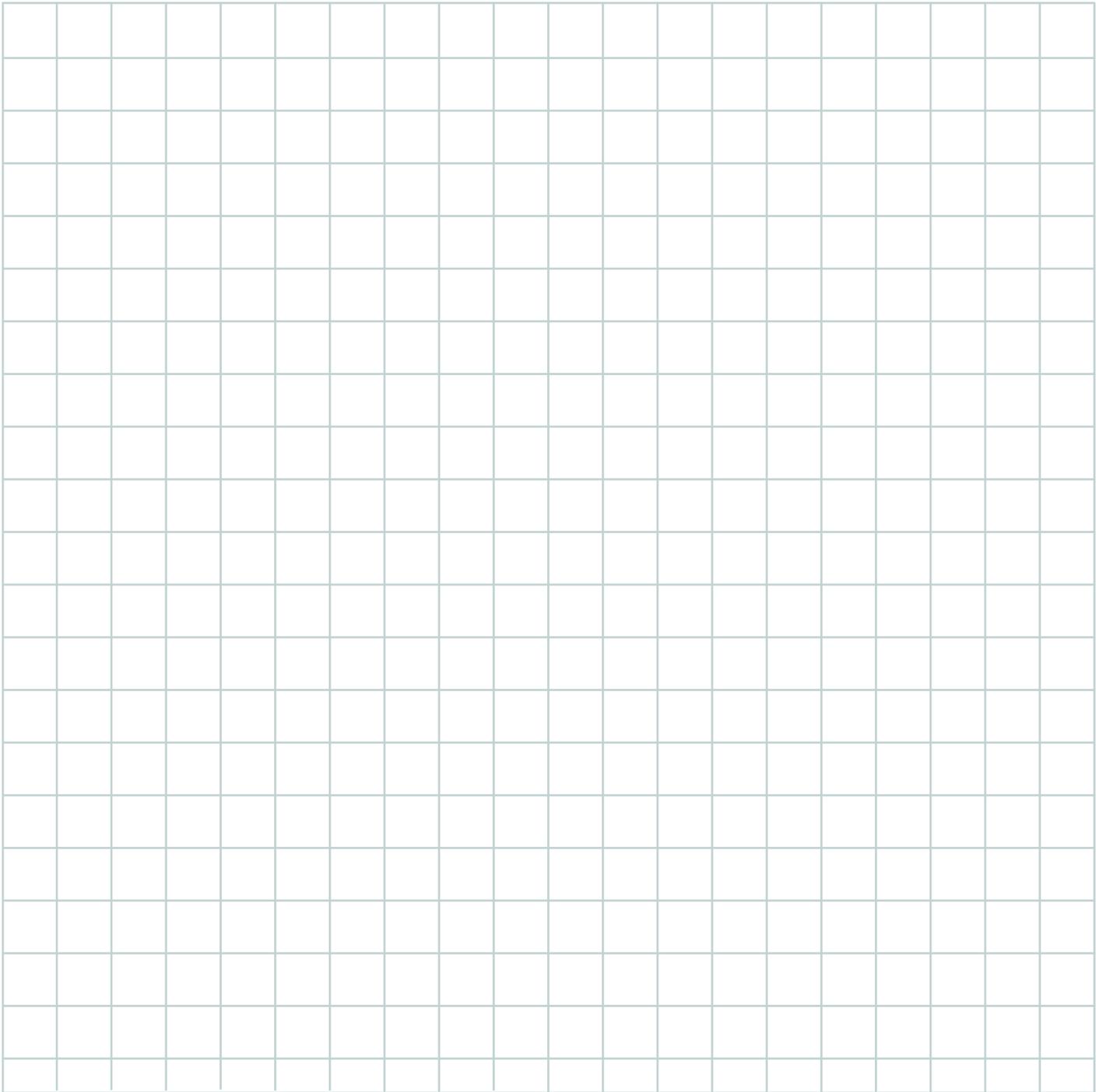


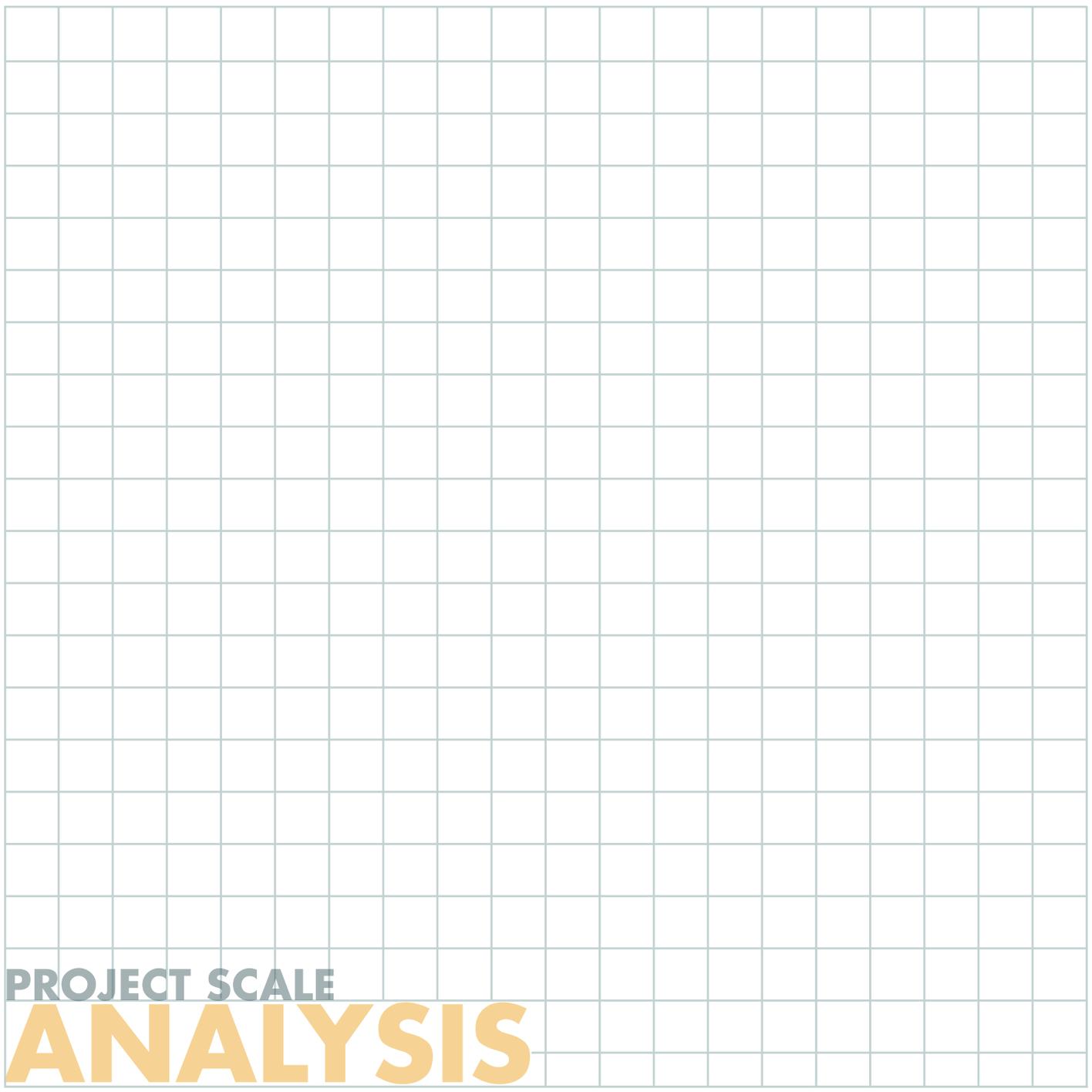
Based on this analysis to understand certain important aspects of the context of the case study, such as the location of the school, relevant uses in the area, its main roads and means of transportation, vegetation, and climate, we can conclude that it is a city with positive and negative aspects.

It can be observed that the city is well endowed with services and a variety of commercial uses. The accessibility from other cities to Casale is complicated by public transport; inside the city is more accessible, but the city works mainly by private or personal vehicle.

In terms of vegetation, there are a variety of trees dedicated to the large number of green areas that exist, predominantly rice cultivation and the size of the cement hills and warehouses in terms of production. The climate in Casale Monferrato is characterized by hot and clear summers, on the other hand, cold and cloudy winters, with a temperature variation during the year between 0 °C and 30 °C.

The climate in Casale Monferrato is mild, generally warm, and generally hot. Therefore, it is essential to consider these factors when making the possible changes in the proposal, the climate being the most relevant factor for the location of the activities both inside and outside the school.





**PROJECT SCALE**  
**ANALYSIS**



## **BUILDING ANALYSIS**

### **ANALYSIS OF ACCESSIBILITY:**

This accessibility analysis shows how the school presents an adequate accessibility for any type of user since it has as a strength that it only has a second floor, this makes accessibility easier and does not have to look for other accessibility aids such as elevators, stairs or ramps, which are also present in the school since it presents a small unevenness in the second building, but still has the necessary tools to solve them. The school has two buildings which are mainly connected with a corridor and the central outdoor courtyard, if we can see how the back building is less relevant to the school as it is noticeable that its main building is the one in front.



**ACCESSIBILITY**

- Internal accesibility (ramps, stairs)

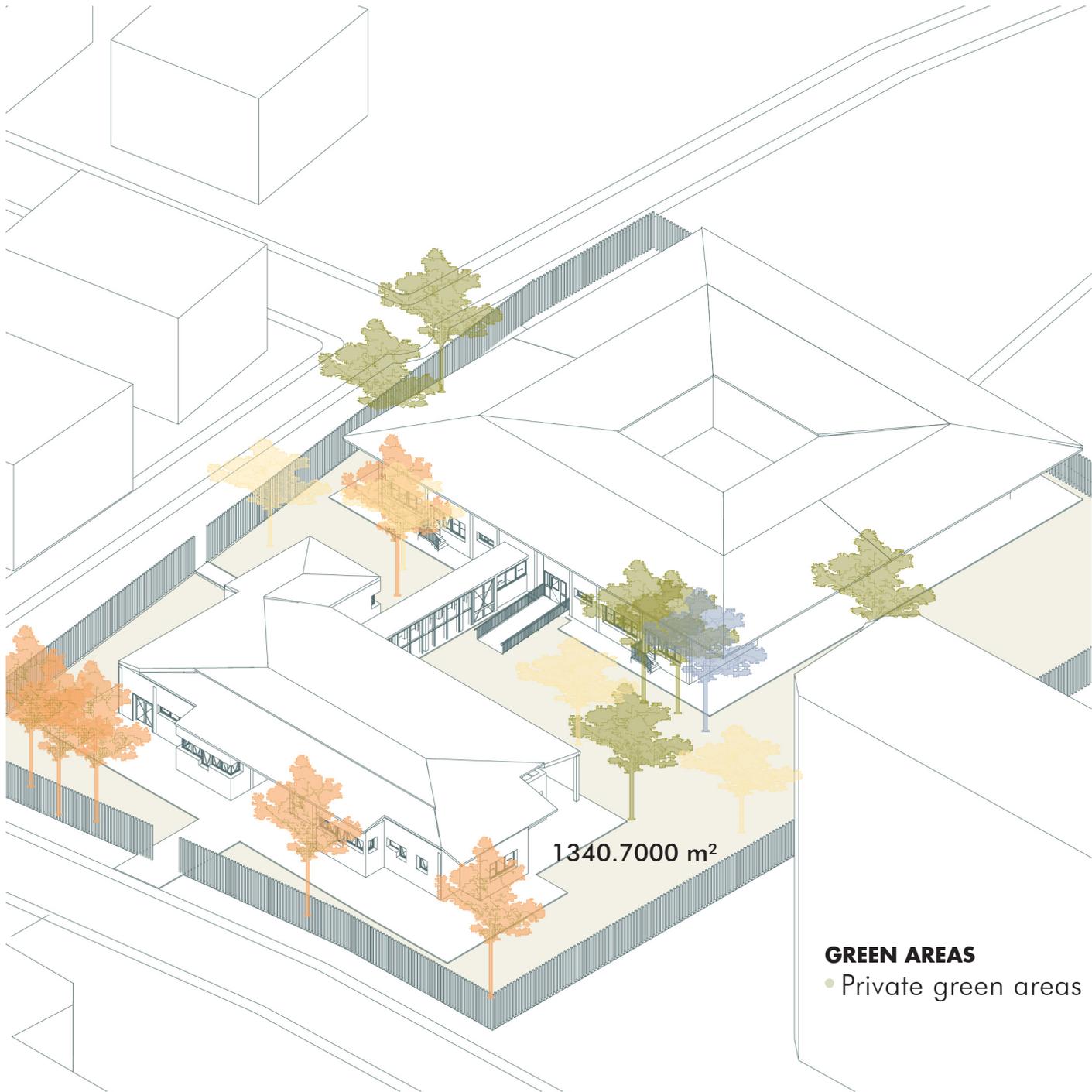


## ANALYSIS OF GREEN AREAS:

We present a green area of approximately 1 340 m<sup>2</sup> in the building, is a building that has a large outdoor playground for children, but unfortunately the only use they give is the playground and also only use the central area of this, since the other areas are not properly equipped for children and can become dangerous areas for them, we see that do not present any design of space.

We also entered 4 types of trees that are present in the area which will help us to ensure shaded spaces in the hottest days of the year.

This analysis is done to be able to better respond to the needs of children in the outdoor playground, as we want to generate a better response both indoors and outdoors.



1340.7000 m<sup>2</sup>

**GREEN AREAS**

- Private green areas



### Norway maple:

The scientific name is *Acer platanoides* and it is a species of trees that are originally from Europe and West Asia. The best known maple tree is located in the United States, its height is between 20 and 30 meters, the maple tree hosts about 300 species of insects.

### Botanical name:

*Acer platanoides*

**Common Name:** Norway maple

**Lifespan:** Perennial

**Bloom time:** Spring

**Plant Height:** 9m to 30m

**Spread:** 15m to 20m

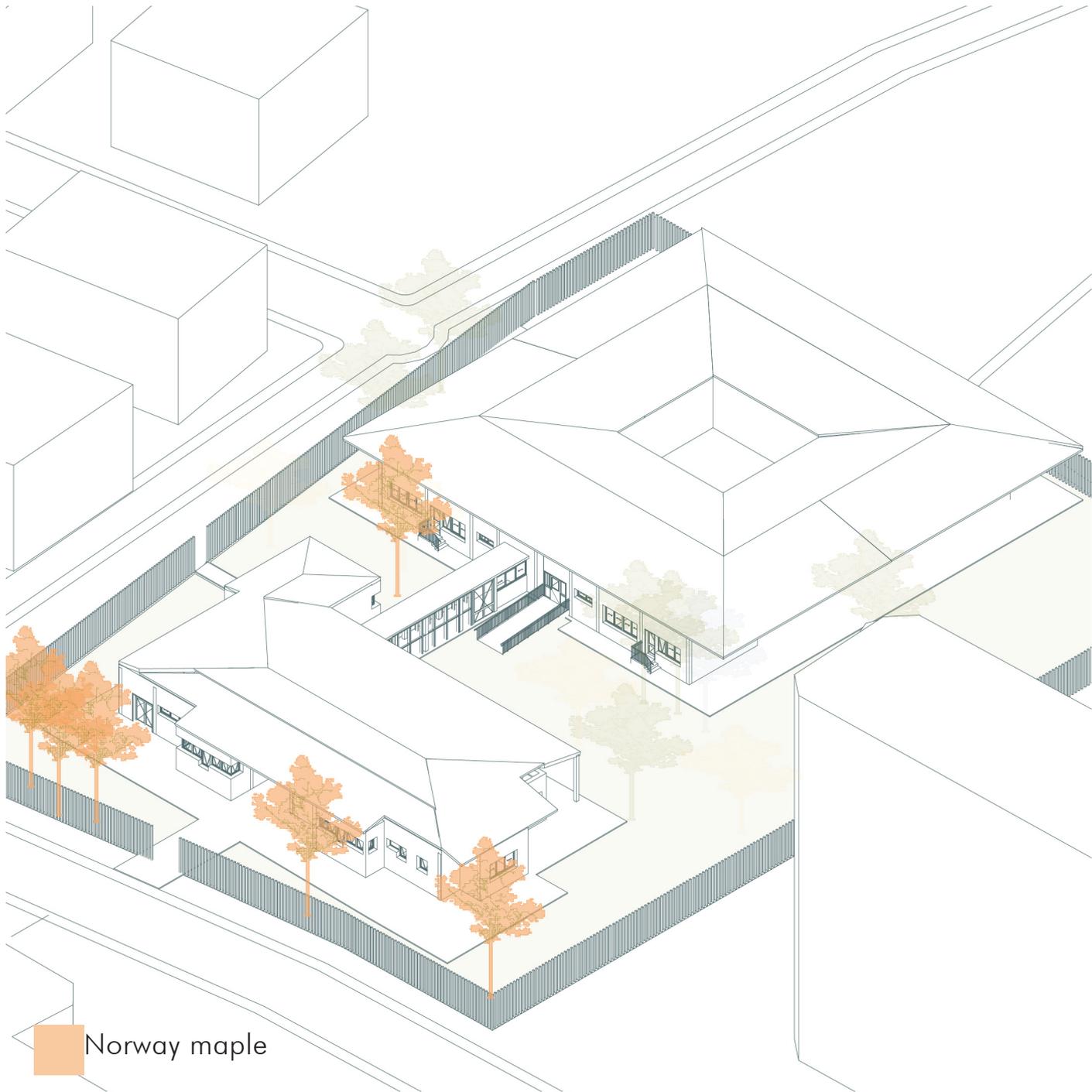
**Flowers Size:** 3mm to 4mm

**Flower Color:** Yellow-Green



App Picture this- plant identifier

Norway maple tree . Free3D. (n.d.). Retrieved January 26, 2022, from <https://free3d.com/3d-model/9-meter-autumn-norway-maple-tree-8436.html>



Norway maple



## Red maple:

The scientific name is *Acer rubrum* and it is a species of trees that are originally from North American tree. The wood is good for the use in the furniture, its height is between 18 and 30 meters, the maple tree hosts birds.

### Botanical name:

*Acer rubrum*

**Common Name:** Red maple

**Lifespan:** Perennial

**Bloom time:** Spring

**Plant Height:** 18m to 30m

**Spread:** 9m to 20m

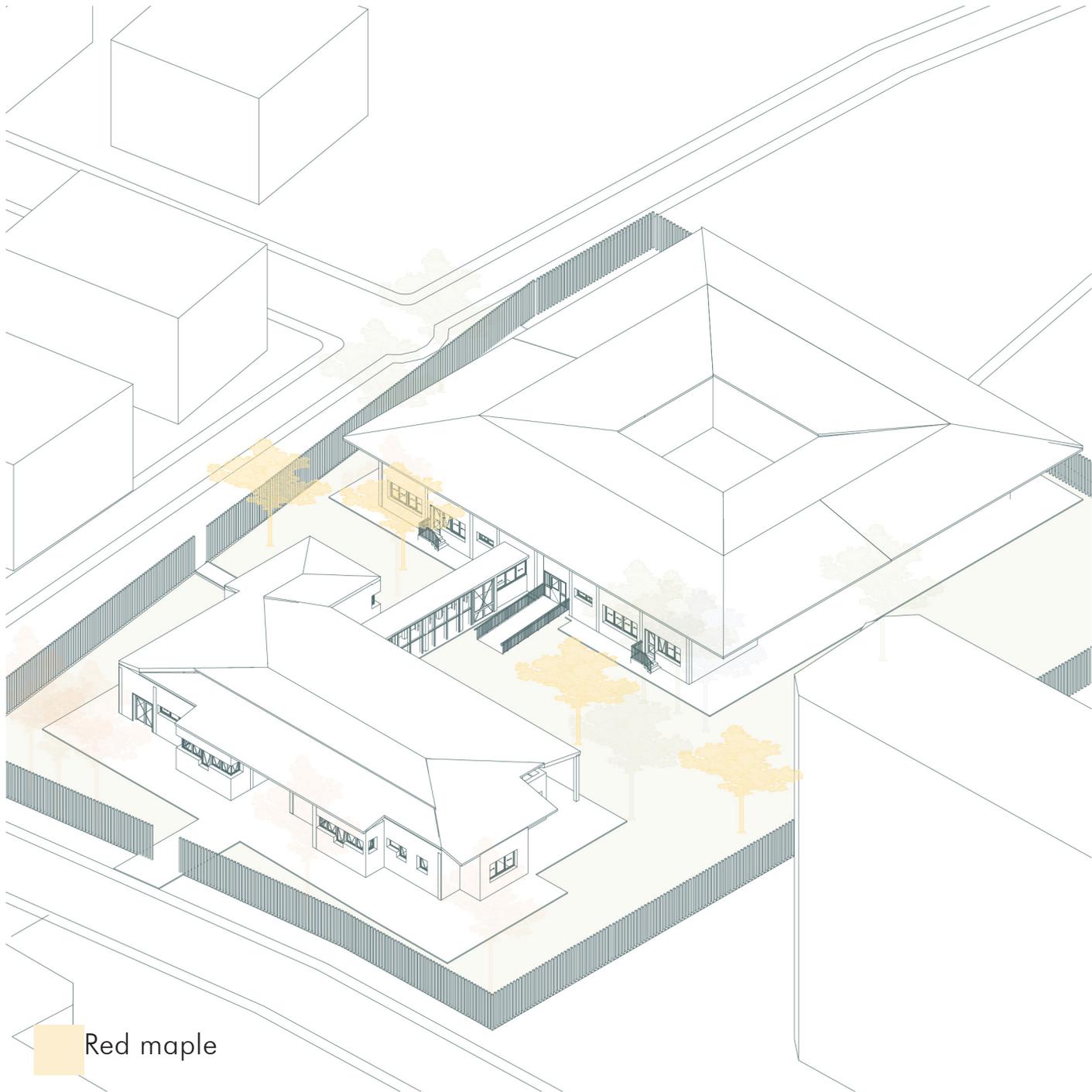
**Flowers Size:** 1mm to 5mm

**Flower Color:** Red



App Picture this- plant identifier

Green Mountain® Sugar Maple. Bower & Branch. (n.d.). Retrieved January 26, 2022, from <https://www.bowerandbranch.com/t/15/green-mountain-sugar-maple/>



Red maple



### Tulip poplar:

The scientific name is *Liriodendron tulipifera* and it is a member of the magnolia family. Its height is between 10 and 40 meters, is one of the tallest hardwoods in North America. The flowers are nectar-rich.

#### Botanical name:

*Liriodendron tulipifera*

**Common Name:** Yellow poplar

**Lifespan:** Perennial

**Bloom time:** Spring-Summer

**Plant Height:** 10m to 40m

**Spread:** 12m

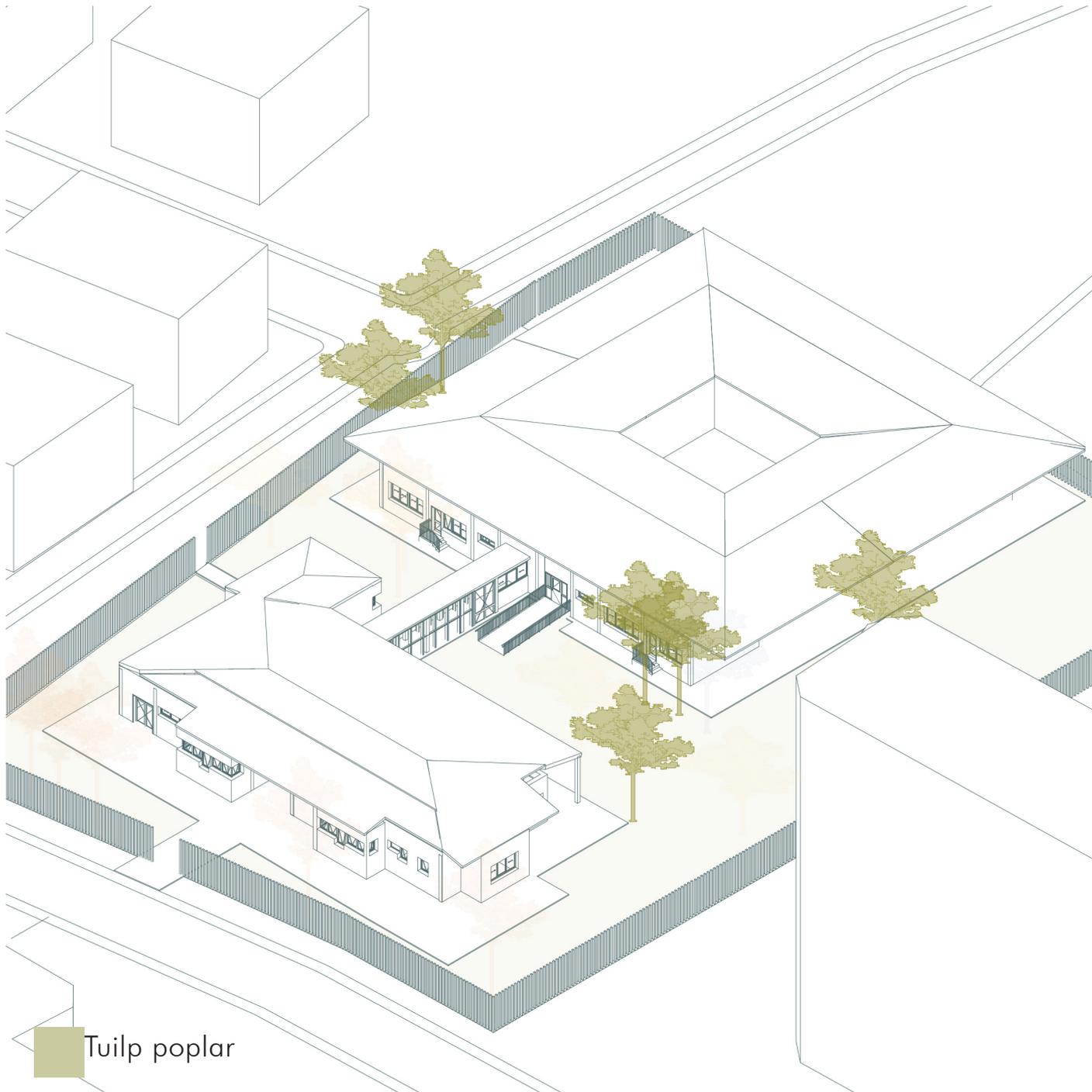
**Flowers Size:** 4cm

**Flower Color:** Yellow-Green-Orange



App Picture this- plant identifier

Tulip Poplar . FastGrowingTrees.com. (n.d.). Retrieved January 26, 2022, from <https://www.fast-growing-trees.com/products/tulip-poplar-little-volunteer-tree>



Tuilp poplar



### **Maidenhair tree:**

The scientific name is *Ginkgo biloba*, it is a tree that is represented because it is a living fossil tree, a tree that has a long history in time. It is considered one of the oldest plants.

### **Botanical name:**

*Ginkgo biloba*

**Common Name:** Kew

Ginkgo

**Lifespan:** Perennial

**Bloom time:** Spring

**Plant Height:** 20m to 35m

**Spread:** 8m to 11m

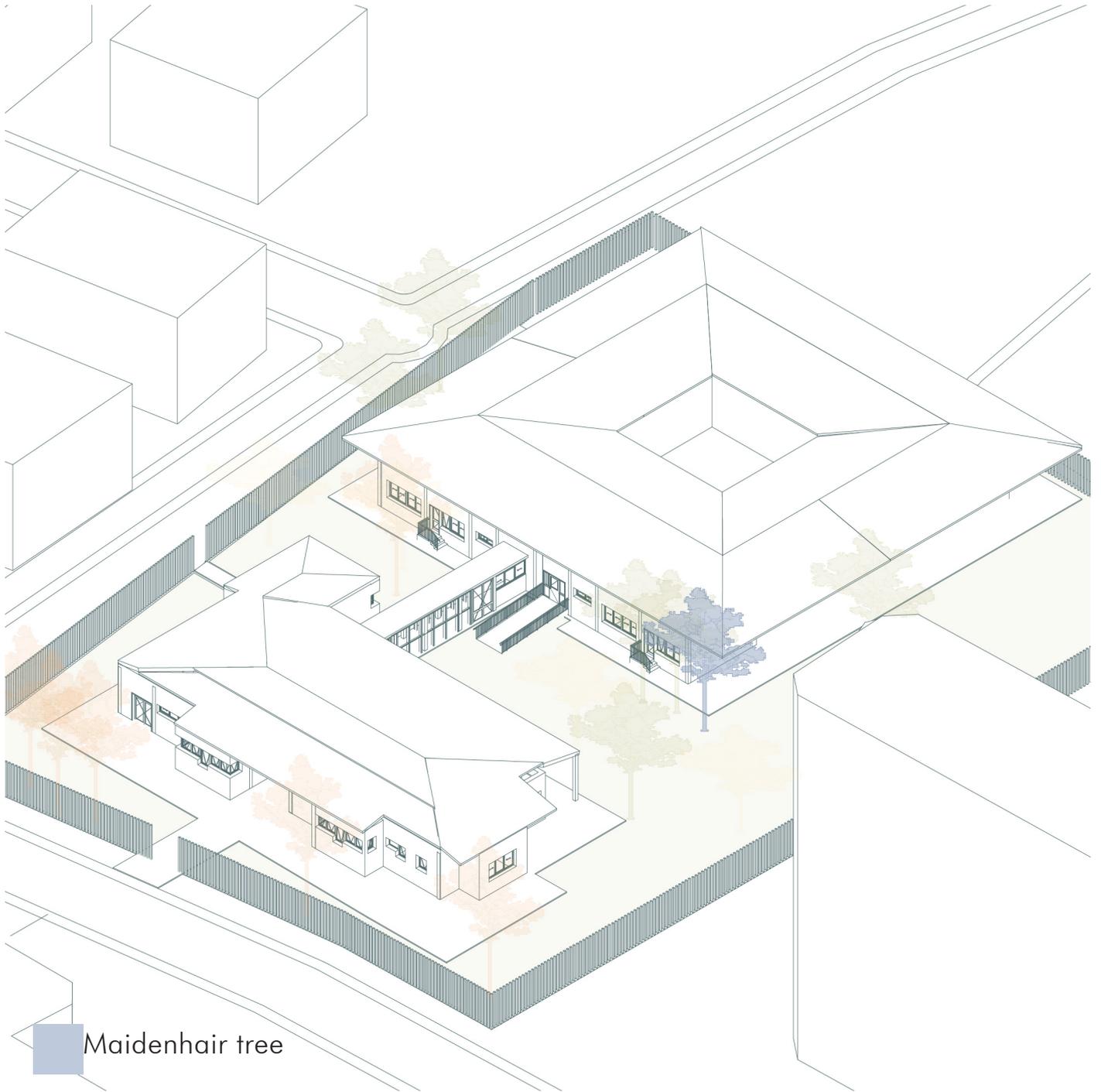
**Flowers Size:** 2.5cm

**Flower Color:** Yellow-Green



App Picture this- plant identifier

Wikimedia Foundation. (2022, January 20). *Ginkgo biloba*. Wikipedia. Retrieved January 26, 2022, from [https://en.wikipedia.org/wiki/Ginkgo\\_biloba](https://en.wikipedia.org/wiki/Ginkgo_biloba)



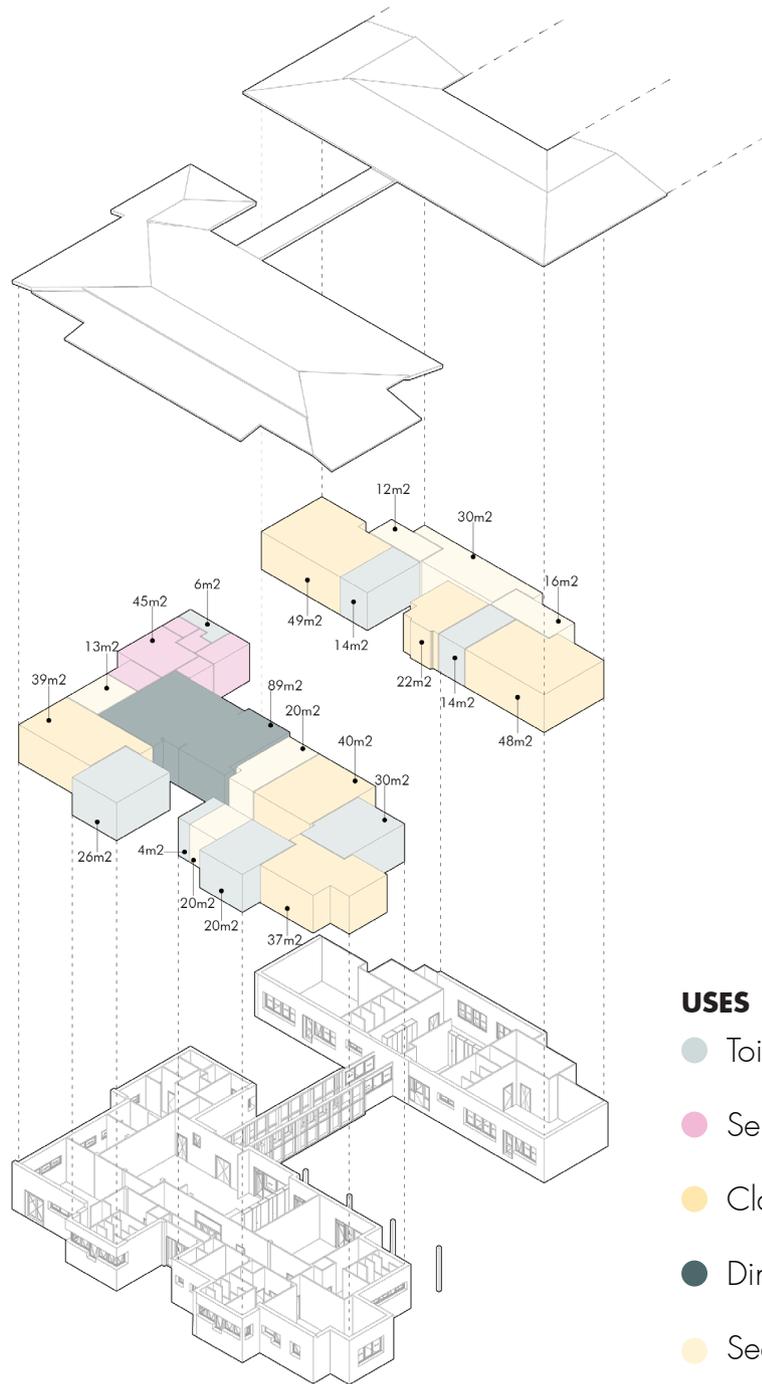
Maidenhair tree



## ANALYSIS OF USES

This analysis of uses shows us how the school is distributed in the two buildings, we can analyze that the first building is the building that presents a better distribution, we can see how each classroom has an individual personal hygiene area, we also see the cafeteria area which we can analyze the large size of area it has and how this dimension at the time of generating this activity with children can cause sound problems for children, We found that there are no classrooms dedicated especially for play in an enclosed area, which does not lead to think about those colder days of the year where children do not have a correct place to perform their interactive activities in warm places.

With these three analyses we can conclude many deficiencies that our building has at the time of the response to our users, which can generate different opportunities to improve the comfort of students and teachers.



**USES**

- Toilets
- Services
- Classroom
- Dining Room
- Secondary Classrooms



## SOLAR ANALYSIS

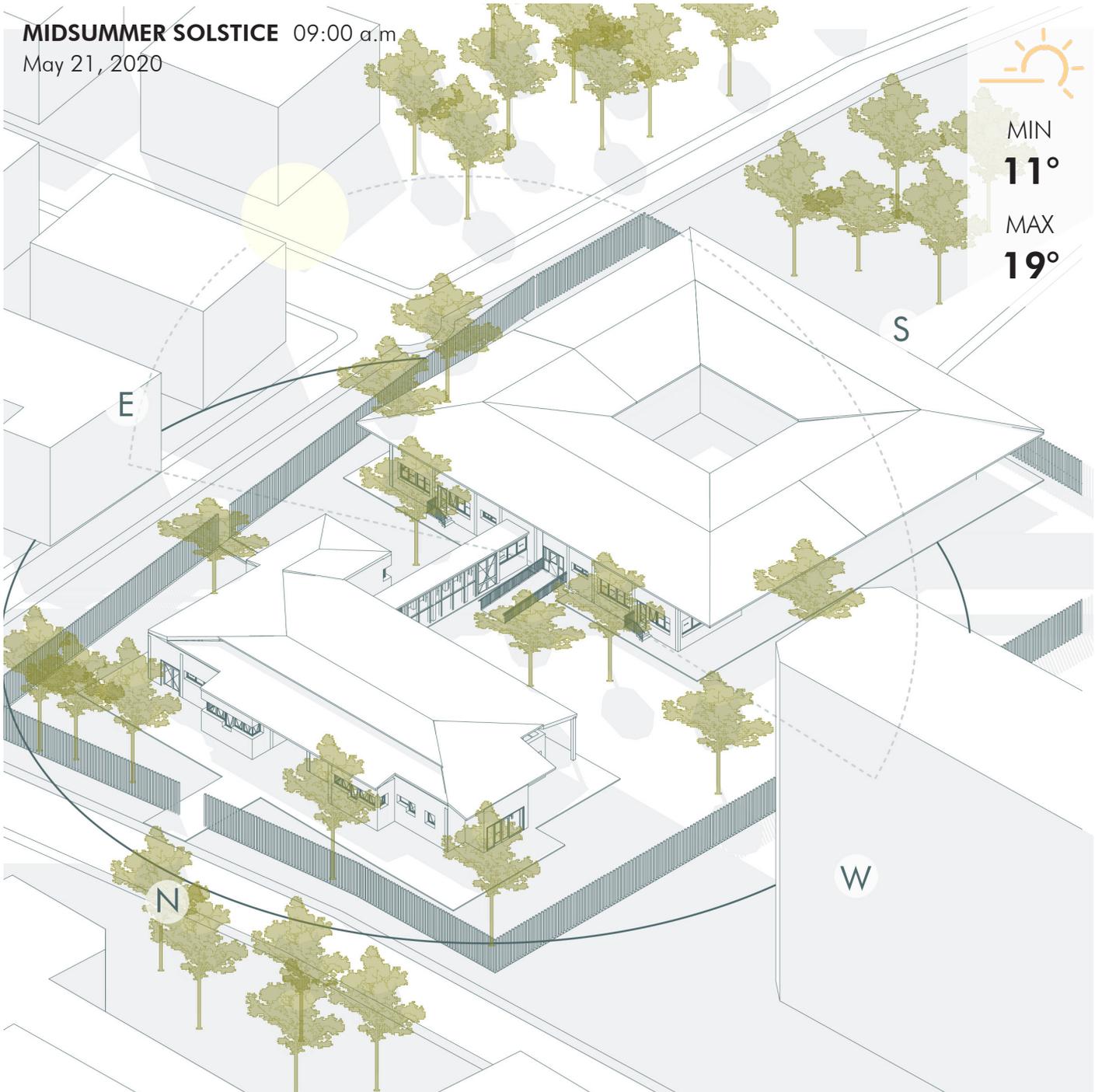
A study of the sunshine in the school was carried out in order to analyze the shadows generated on the hottest and coldest days, we decided to choose the days that coincided with the children's school schedules.

The first date we chose was May 21 since it is the month in which the first hot temperatures of the year begin to be felt, with this analysis that we made at 9:00 am we realized that the school generates shade at points that does not affect the activity of the child because they are points where the child can play freely for different seasons, and choose between having shade or sun. The central playground is the space that receives more sun at this time which could become an opportunity because it is the morning sun that is considered one of the best for the skin, where the child gets to feel at a comfortable temperature.

**MIDSUMMER SOLSTICE** 09:00 a.m.  
May 21, 2020



MIN  
**11°**  
MAX  
**19°**



This second analysis is performed on the same date as the previous May 21, but we did it in the afternoon at 16:00 hrs because this is the time when the children are finishing their day at home and we wanted to see how the sun was shared to be able to finish the day in external activities on days when the weather makes it possible, as this would achieve greater stimulation for the child, since it could achieve to generate their learning day in physical activities and in contact with nature. Here we can see that there is a great shadow in the patio, which we also see as an opportunity since activities can be carried out in any of the areas without receiving a large amount of sun, allowing the child to develop more movement without any type of fatigue due to the environment.

**MIDSUMMER SOLSTICE** 16:00 p.m.  
May 21, 2020



The third solar analysis is performed on December 21 which is the shortest and coldest day of the year, where we conducted the first study at the time of 9: 00 hrs the same as the previous one, with the purpose of seeing how the climate and the children receive starting the study day, we can notice that a large amount of shade is generated which with the temperature of the climate that occurs in this time of winter are very low, this helps us to understand that children need auxiliary spaces to perform their play and recreational activities in enclosed spaces that achieve a good thermal comfort for them, we can highlight that at midday you can find a less amount of shade.

**WINTER SOLSTICE** 09:00 a.m.  
December 21, 2020

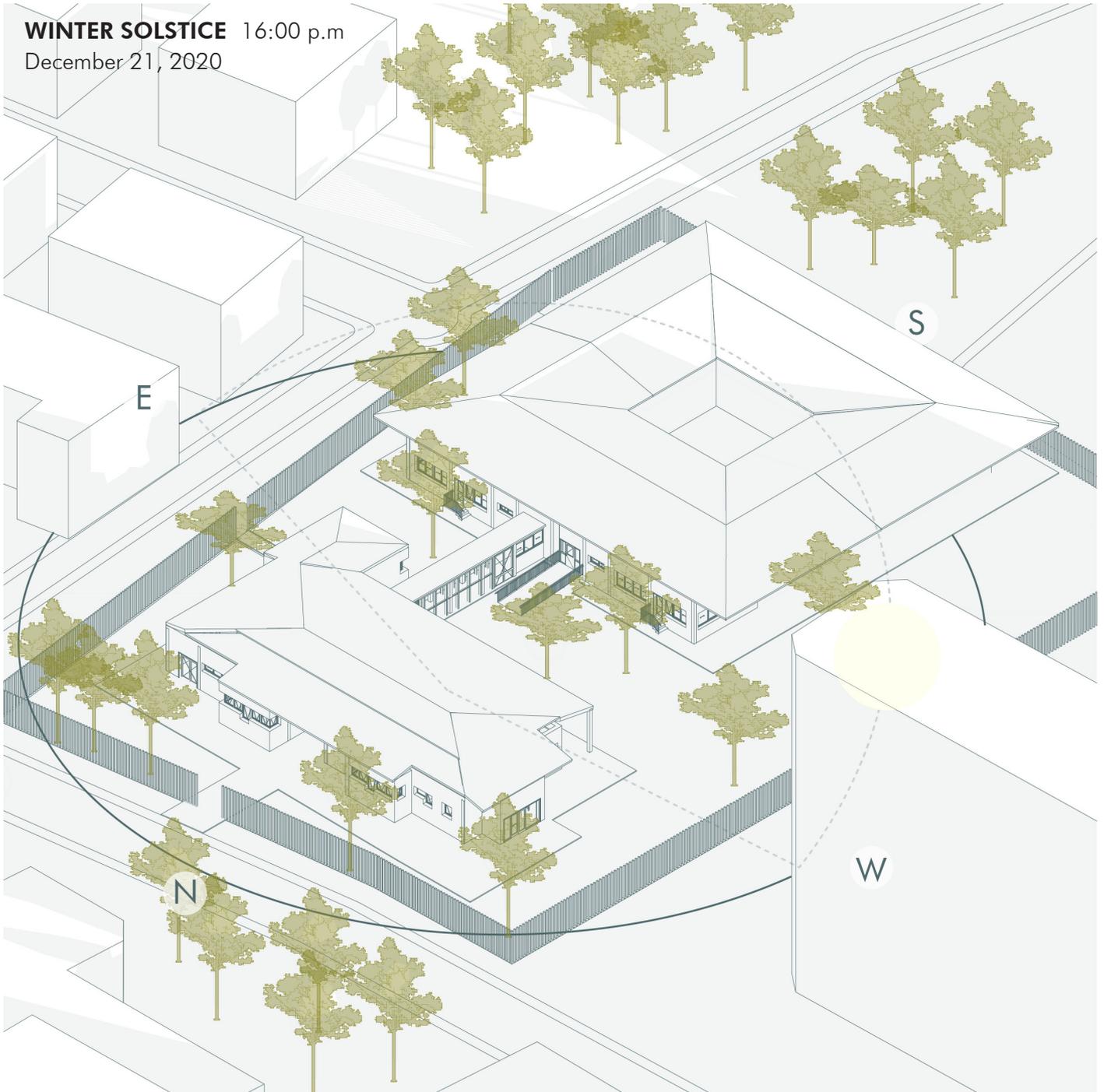


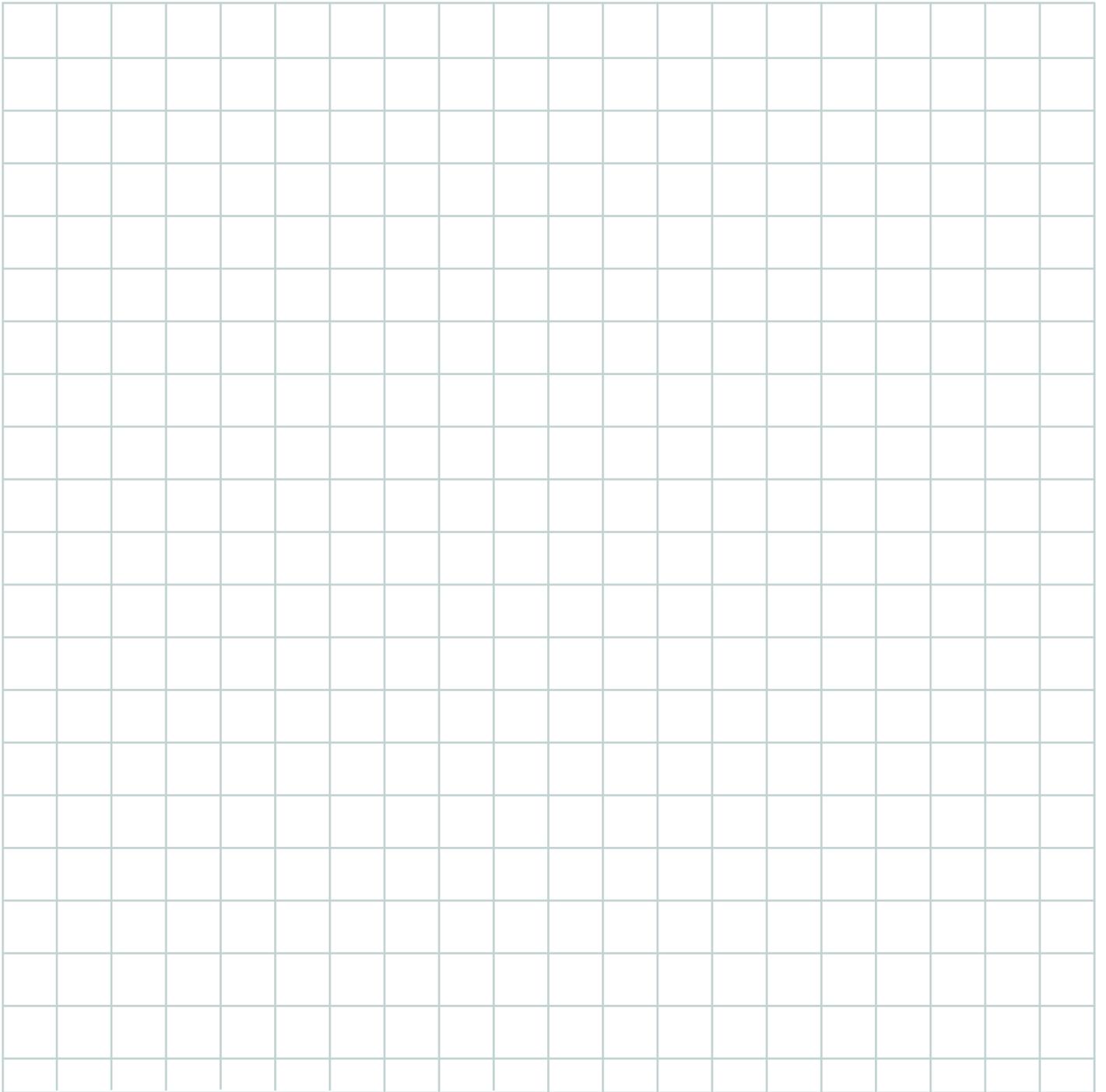
MIN  
**-3°**  
MAX  
**7°**



The last study was also conducted on December 21 but at 16:00 hrs, understanding the last hours of the children's day we found the same behavior of shade in the outdoor areas, which highlights more the need for auxiliary internal spaces that can meet to assist these activities for children, as it is very important that children have spaces outside the classroom, especially for children with autism, it stimulates them to have a stimulus of relaxation and learn to behave in different areas, which teaches them to have a routine and a guide in different spaces not only in their classroom, with this we can achieve that the child can also put into practice these behaviors in their own home.

**WINTER SOLSTICE** 16:00 p.m.  
December 21, 2020





SCUOLA DELL' INFANZIA LUZZATI  
**PLANIMETRY**



## DESCRIPTION

|                                  |  |
|----------------------------------|--|
| <b>School</b>                    | Scuola dell'infanzia "Luzzati                  |
| <b>Address</b>                   | Via Roselli 30, 15033 Casale Monferrato, Italy |
| <b>Total area of the school</b>  | 1.020,621 m <sup>2</sup>                       |
| <b>Total area of green areas</b> | 1.733,158m <sup>2</sup>                        |
| <b>Number of floors</b>          | 1  |
| <b>Project designer</b>          | unknown information                            |

|                                     |                                |
|-------------------------------------|--------------------------------|
| <b>Number of Students</b>           | 80-90 (3-6 years)              |
| <b>Number of classes</b>            | 5                              |
| <b>Media of students</b>            | 20-25 students                 |
| <b>Hours per week</b>               | 25 (halfday)-45 hours(all day) |
| <b>Number of teachers</b>           | 10                             |
| <b>Number of municipal teachers</b> | 2                              |
| <b>Number of support teachers</b>   | 3                              |
| <b>School hours</b>                 | 7:30-18:00 (flexible)          |
| <b>School year</b>                  | September- June                |

Source Information: provided by the teacher Paola Lupano of the school "Scuola dell' Infanzia Luzzati" Casale Monferrato.

We visited the school of Casale Monferrato, where we had the opportunity to observe and confirm the information that the teacher Paola had previously given us in a video call.

We were able to see the school and its surroundings and how it is shaped, observing the number of green areas that make up the city, with a hot climate in September.

The teacher showed us around the school, starting with recognizing the spaces, including classrooms, bathrooms, lunch area, teachers' areas, and the green area of the school.

Explaining to us the deficiencies and strengths of the school, including how it functions on a day-to-day basis at the beginning of classes, because at that time, the school was closed and was being reorganized for the next start of classes.

We were able to understand the problems present in the school to avoid a positive inclusion.

Finally, we continued photographing the school installations and conversing with the teachers in charge of each classroom; they presented their recommendations and comments about the functioning of the classrooms and the green space outside.

Among the teachers' comments, what stood out the most was the lack of structure in the schoolyard, since it is vast and is not used correctly due to lack of maintenance in some areas. The acoustic problems in the dining room generate irritability in the children.

Therefore, our objective was to reinforce in the proposal those positive aspects of the school and eliminate or control the harmful elements present in it.

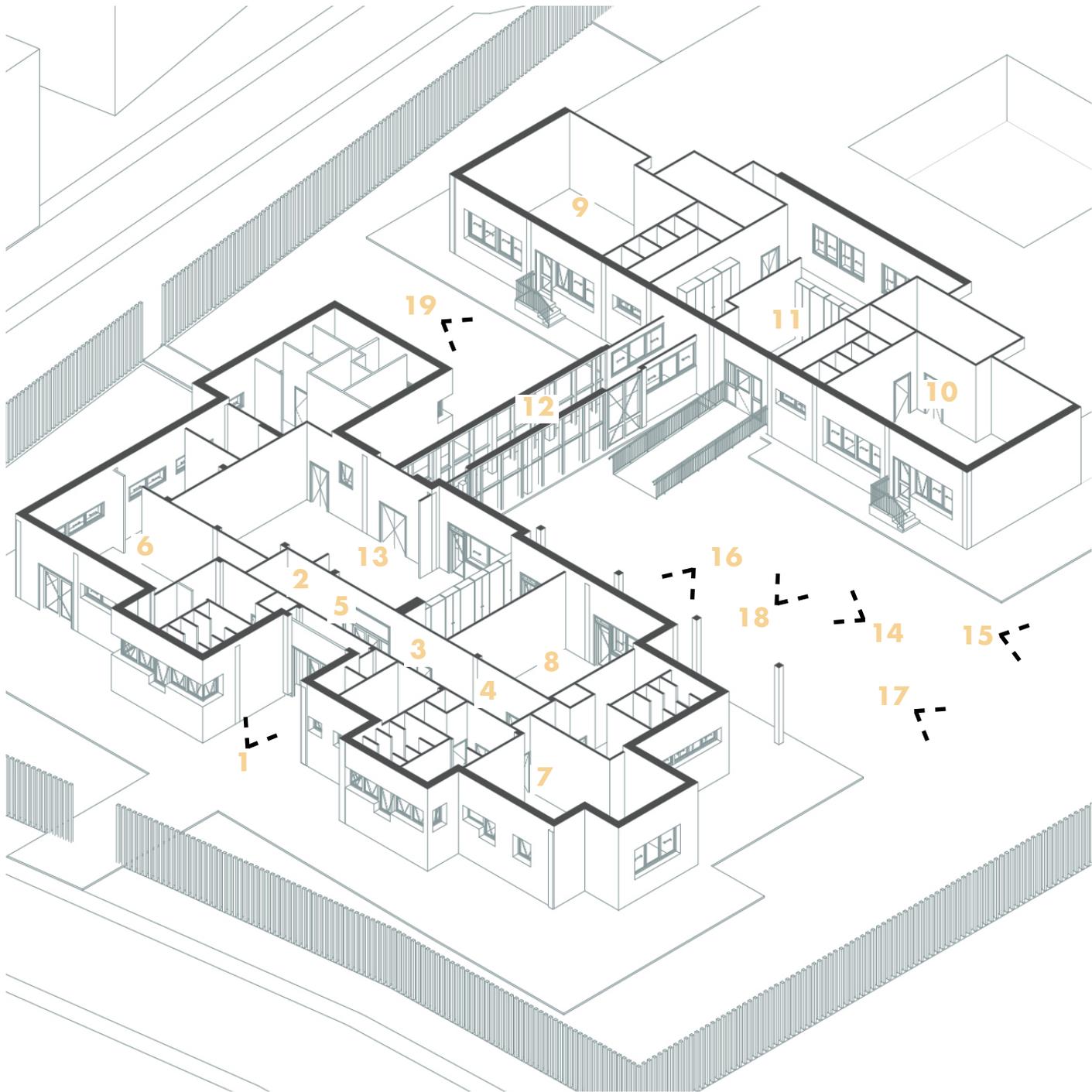




Image source: provided by the teacher of the school "Scuola dell' Infanzia Luzzati" Casale Monferrato.





2

Image source: provided by the teacher of the school "Scuola dell' Infanzia Luzzati" Casale Monferrato.



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Image source: provided by the teacher of the school "Scuola dell' Infanzia Luzzati" Casale Monferrato.





Image source: provided by the teacher of the school "Scuola dell' Infanzia Luzzati" Casale Monferrato.



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Image source: provided by the teacher of the school "Scuola dell' Infanzia Luzzati" Casale Monferrato.





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Image source: provided by the teacher of the school "Scuola dell' Infanzia Luzzati" Casale Monferrato.



Image source: provided by the teacher of the school "Scuola dell' Infanzia Luzzati" Casale Monferrato.





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Image source: provided by the teacher of the school "Scuola dell' Infanzia Luzzati" Casale Monferrato.



Image source: provided by the teacher of the school "Scuola dell' Infanzia Luzzati" Casale Monferrato.



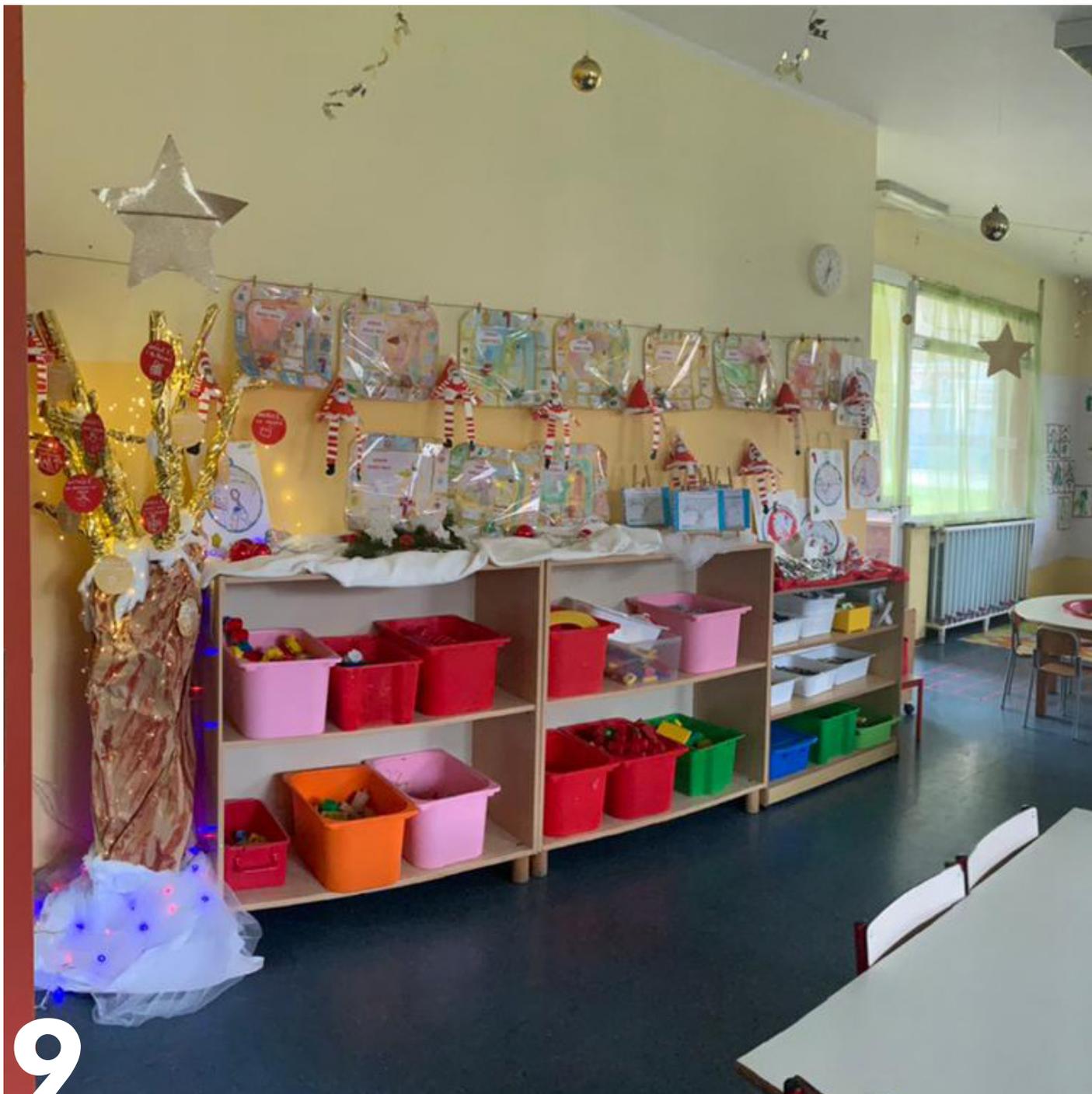


Image source: provided by the teacher of the school "Scuola dell' Infanzia Luzzati" Casale Monferrato.



Image source: provided by the teacher of the school "Scuola dell' Infanzia Luzzati" Casale Monferrato.





9

Image source: provided by the teacher of the school "Scuola dell' Infanzia Luzzati" Casale Monferrato.



Image source: provided by the teacher of the school "Scuola dell' Infanzia Luzzati" Casale Monferrato.





10

Image source: provided by the teacher of the school "Scuola dell' Infanzia Luzzati" Casale Monferrato.



Image source: provided by the teacher of the school "Scuola dell' Infanzia Luzzati" Casale Monferrato.





Image source: provided by the teacher of the school "Scuola dell' Infanzia Luzzati" Casale Monferrato.



Image source: provided by the teacher of the school "Scuola dell' Infanzia Luzzati" Casale Monferrato.





12

Image source: provided by the teacher of the school "Scuola dell' Infanzia Luzzati" Casale Monferrato.



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Image source: provided by the teacher of the school "Scuola dell' Infanzia Luzzati" Casale Monferrato.





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Image source: provided by the teacher of the school "Scuola dell' Infanzia Luzzati" Casale Monferrato.



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Image source: provided by the teacher of the school "Scuola dell' Infanzia Luzzati" Casale Monferrato.





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Image source: provided by the teacher of the school "Scuola dell' Infanzia Luzzati" Casale Monferrato.



17

Image source: provided by the teacher of the school "Scuola dell' Infanzia Luzzati" Casale Monferrato.





18

Image source: provided by the teacher of the school "Scuola dell' Infanzia Luzzati" Casale Monferrato.

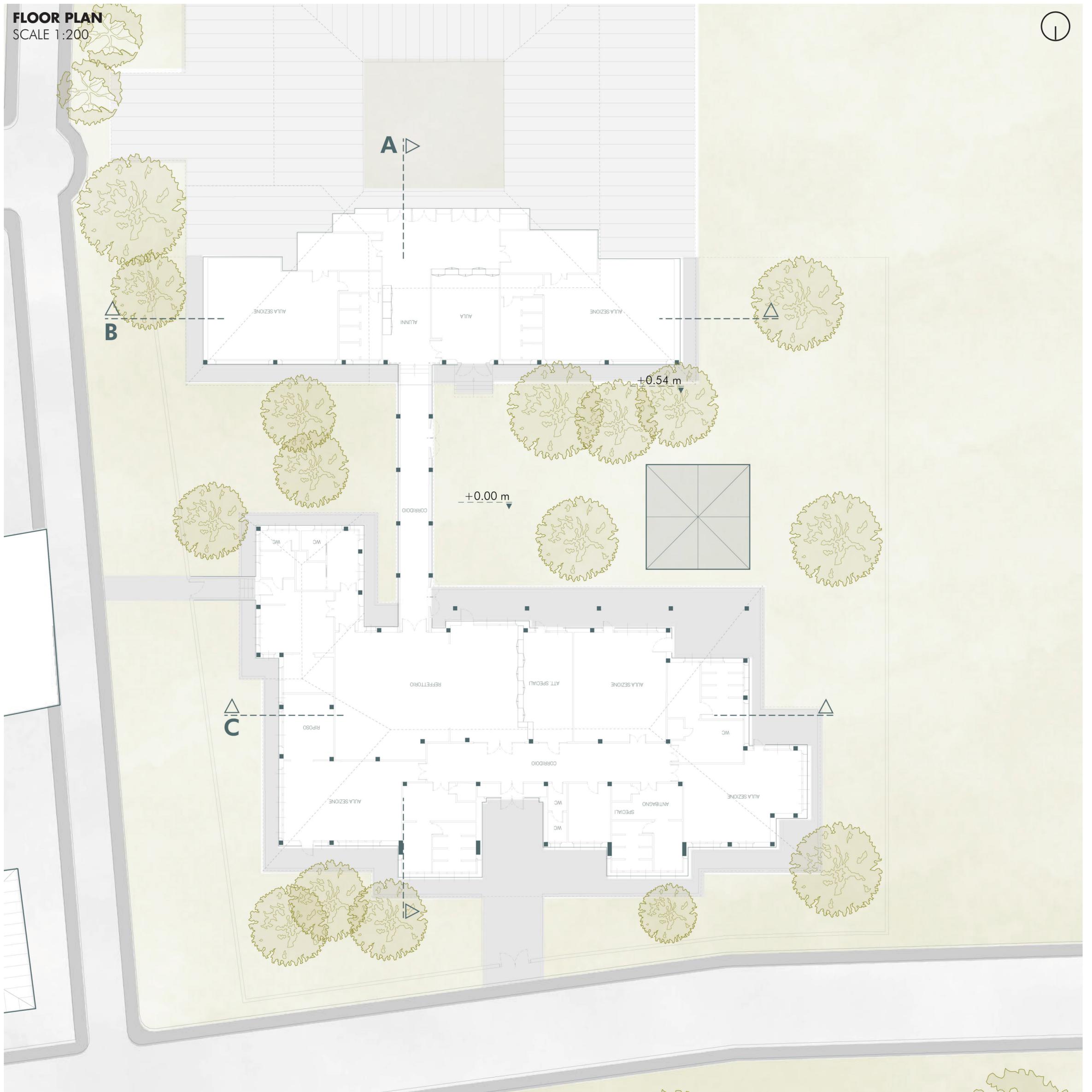


19

Image source: provided by the teacher of the school "Scuola dell' Infanzia Luzzati" Casale Monferrato.









**WEST FACADE**

SCALE 1:200



**EAST FACADE**

SCALE 1:200



**NORTH FACADE**

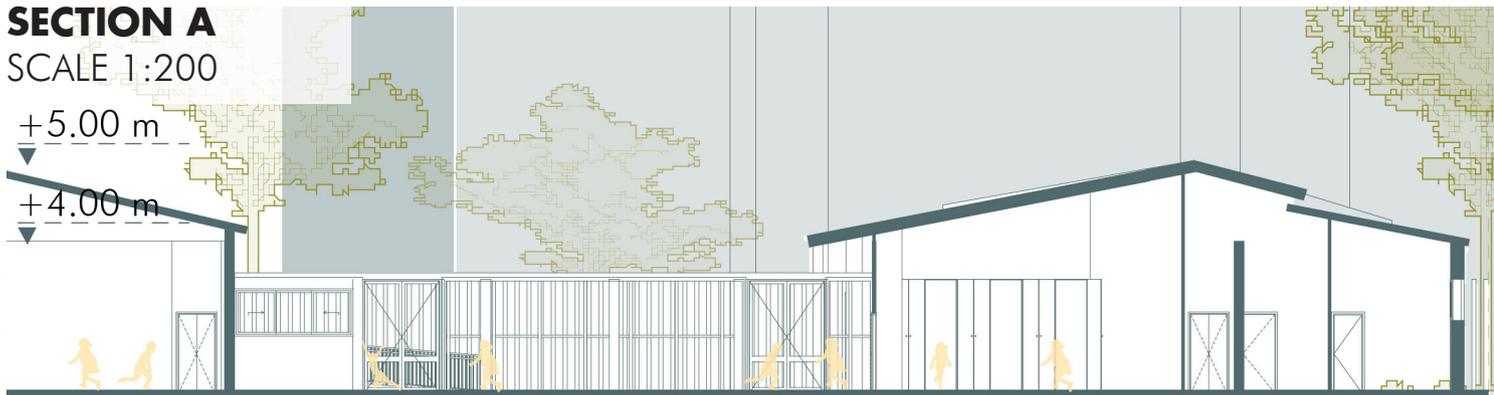
SCALE 1:200

# SECTION A

SCALE 1:200

+5.00 m

+4.00 m



# SECTION B

SCALE 1:200

+5.00 m



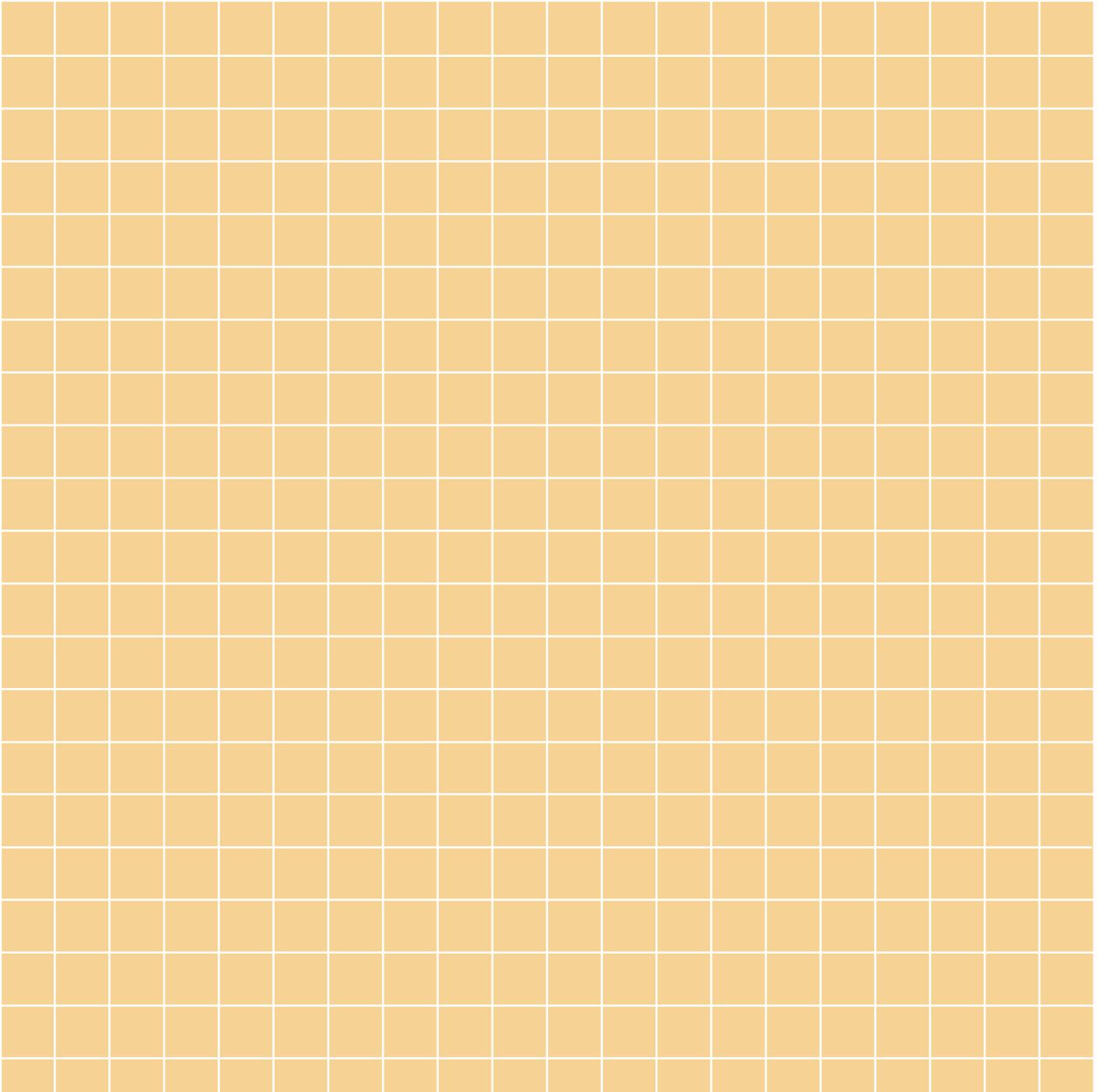
# SECTION C

SCALE 1:200

+5.00 m

+4.00 m





# DESIGN STRATEGIES

# 05





This chapter consists of the sum of the analyses that were carried out previously, also based on the visit to the school with this we put into practice the development of an analysis which will determine different strategic points that will give us parameters to begin to develop the ideas of our project, with this we identified the main benefits and difficulties of the project, where we had to make interventions.

From this we wanted to generate Moodboards full of colors and inspiring images to help us with the brainstorming after all the analysis done.

These Moodboards are made based on our study of colors which were chosen with a specific purpose for the children to perform a specific activity, with this we develop the different spaces, which are divided into 4 main ones to be considered both internally and externally, creating a dialogue between the classrooms and the new multiple spaces with the outdoor patio.

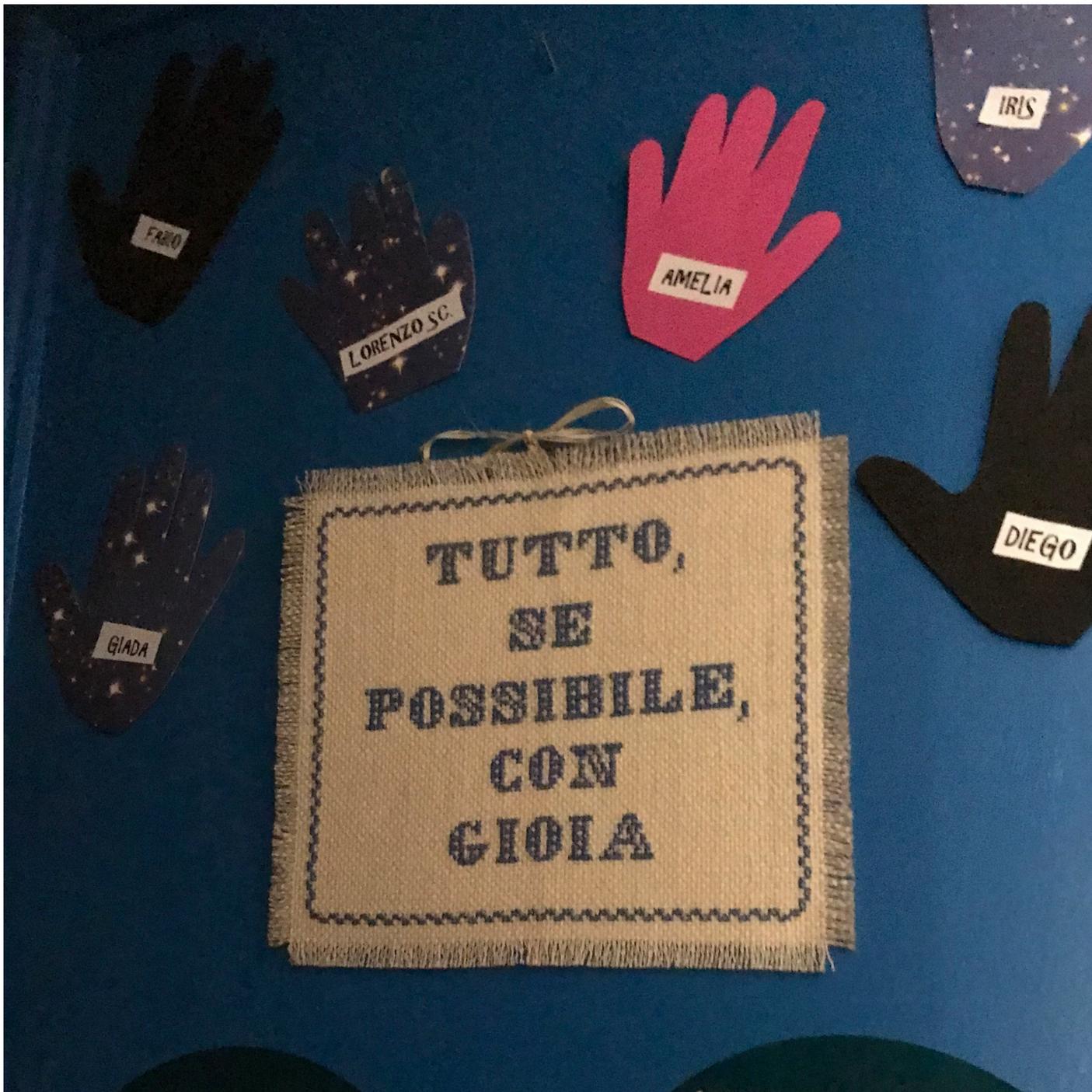


Image source: provided by the students Maria and Antonia, in the visit to Casale Monferrato. September 2021



In the pre-design stage, an analysis was made to understand the conditions of the school installations, where some things were observed which should be modified for the good functioning of the school.

Among them, correct the painting of all the walls of the school according to the color selected for each function.

The maintenance of all the green areas, including the anti-impact protection on the columns and walls.

The operation of the heaters and the anti-impact protection for the children.

The last but not least the proper functioning of all windows, doors and furniture throughout the school, to ensure a favorable climate and functioning inside the school.

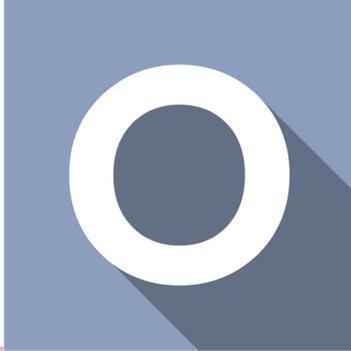
We decided to perform the SWOT analysis, which is an analysis that helps us to highlight the strengths, weaknesses, opportunities and threats, to simplify the process of design or adaptation of the spaces and it will give us parameters for the design strategies that will use later on the project.



S

### WEAKNESS

Recognize the school's weaknesses in order to find exact solutions that will provide us with a better quality of life.



O

### THREAT

We specify the threats as central points to be solved in our project, recognizing them will make it easier to find better solutions.

### STRENGTH

We look to reinforce the strengths we find in the school, improving the experience of the children in their learning time.



W

### OPPORTUNITY

the opportunities we discover in this school will provide clues to strategies for our project.



T



## TRENGTHS

As for the strengths that can be rescued from the school, we can highlight the following:

- The school has an adequate distribution and easy access for all types of users, with wide corridors and well marked with respect to the activities that take place before entering the classrooms, and ramps allowing wheelchair access.
- The classrooms are very spacious, and the flexible furniture is used to create order and routine within the classroom for the children so they have a guide of how to develop the daily activities.
- Each classroom has its own bathroom allowing to maintain order and cleanliness for all children.
- Visual elements are included in the classrooms to establish the context of an activity associated with a physical space.
- The visual instructions provided, allow organizing the environment through concrete visual signals and visual hierarchy, incorporating coding through colors, numbers or symbols.

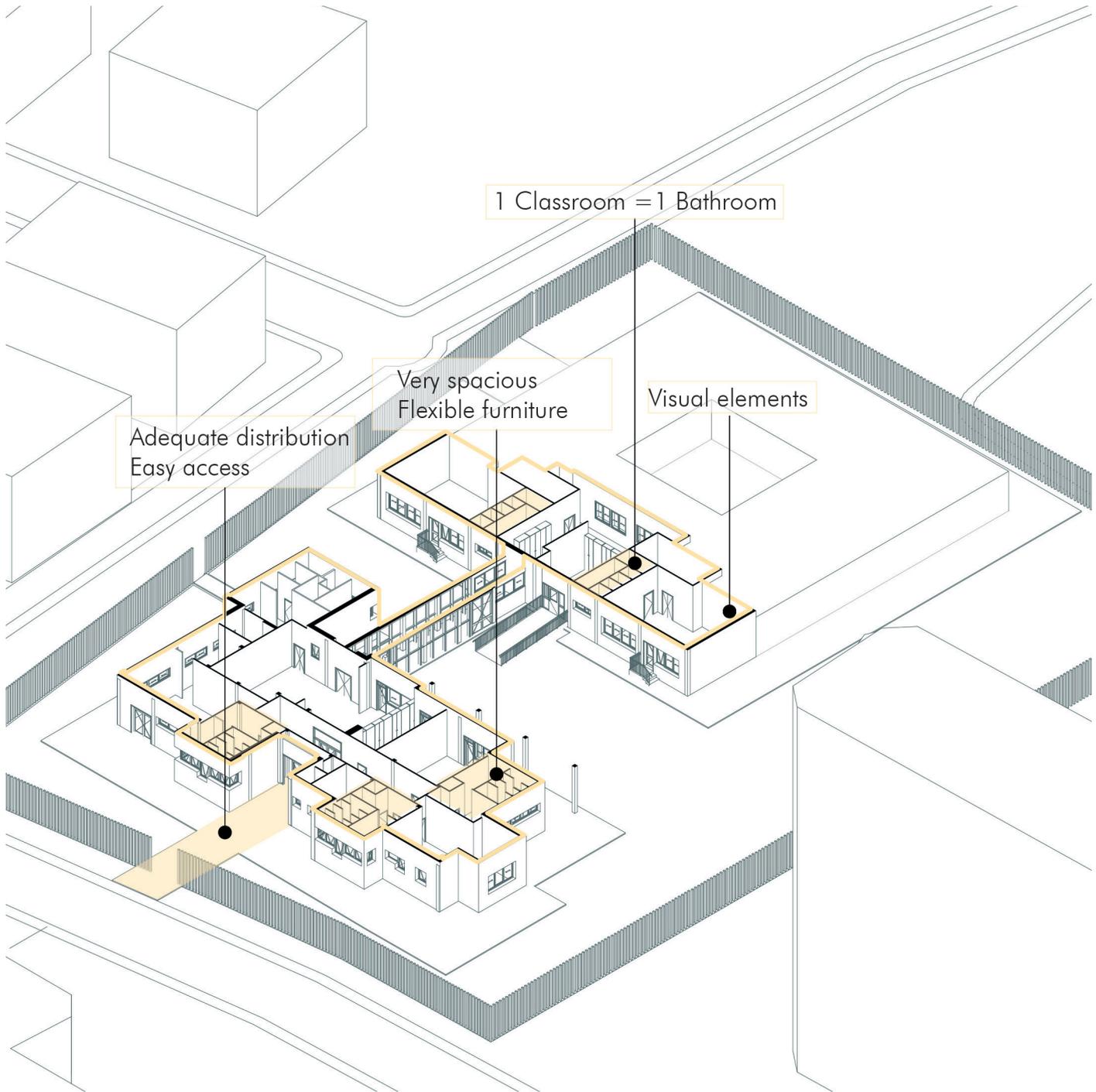




Image source: provided by the students Maria and Antonia, in the visit to Casale Monferrato. September 2021





## WEAKNESS

For the weakness the aspects that could be improved to achieve a better functioning of the school, we should include:

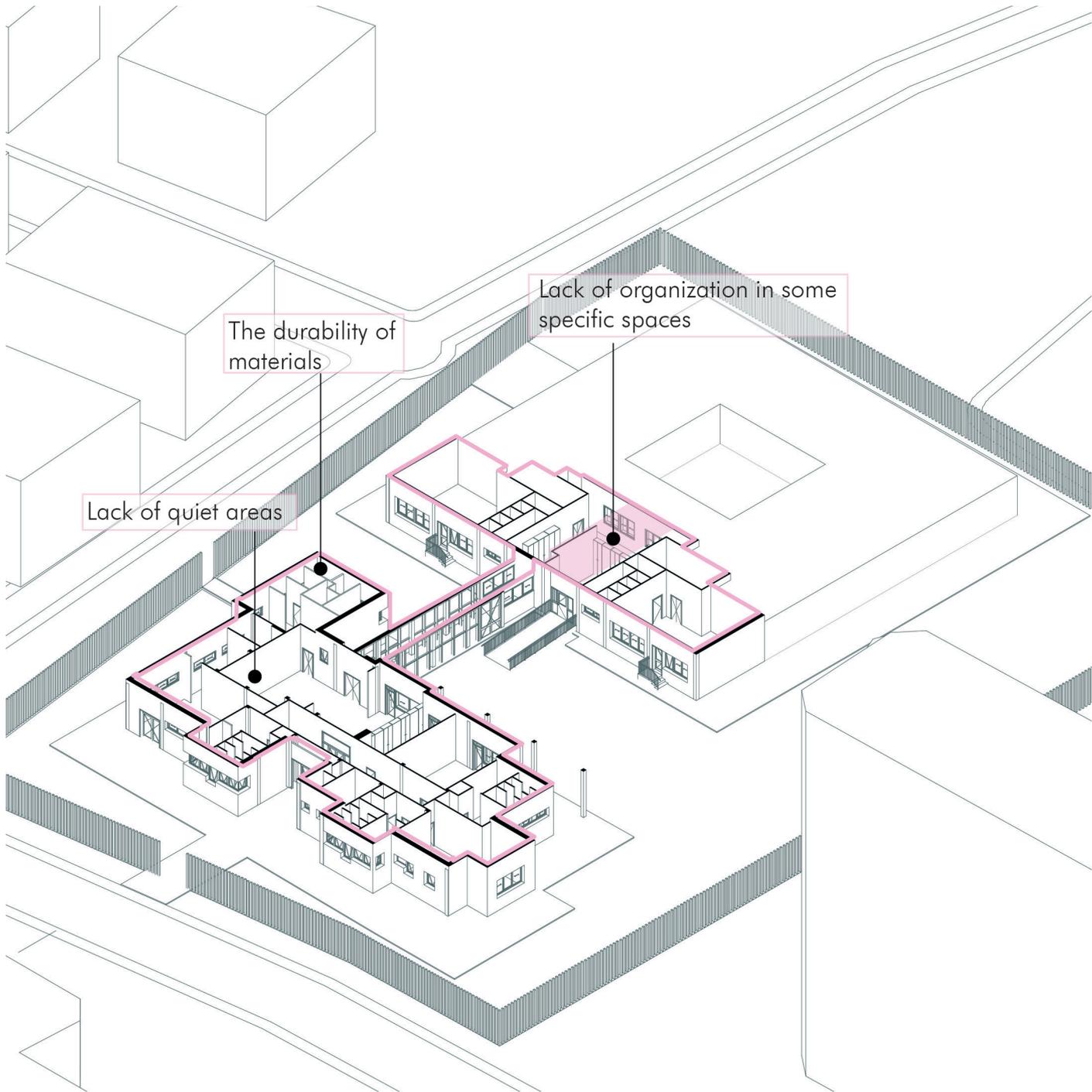
-The lack of sensory integration, because there are many spaces that could be better organized to provide sensory activities for the development of children.

-The durability of materials could also be maximized to provide greater safety for children, ensuring durability and easy maintenance of furniture, facilities, with respect to aggressions the student.

-Lack of quiet areas that allow students with autism to withdraw at certain times to avoid stress and anxiety in spaces where numerous social interactions are required.

Starting from the over stimulation of the lunch room, it is an area that requires attention to be adapted to children with autism, since it lacks the necessary order, to avoid odors, noise and echo that is provided within the space due to the fact that all children eat at the same time.

-Considering the lack of organization in some specific spaces, for example there is another space in the second wing of the building that does not have a specific use and lacks furniture that can establish the routine that the children must perform in it.



The durability of materials

Lack of organization in some specific spaces

Lack of quiet areas



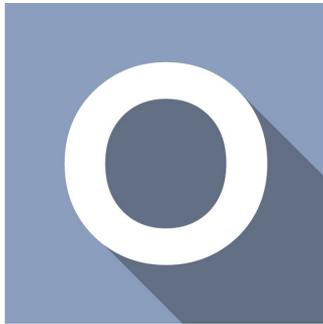


Image source: provided by the students Maria and Antonia, in the visit to Casale Monferrato. September 2021



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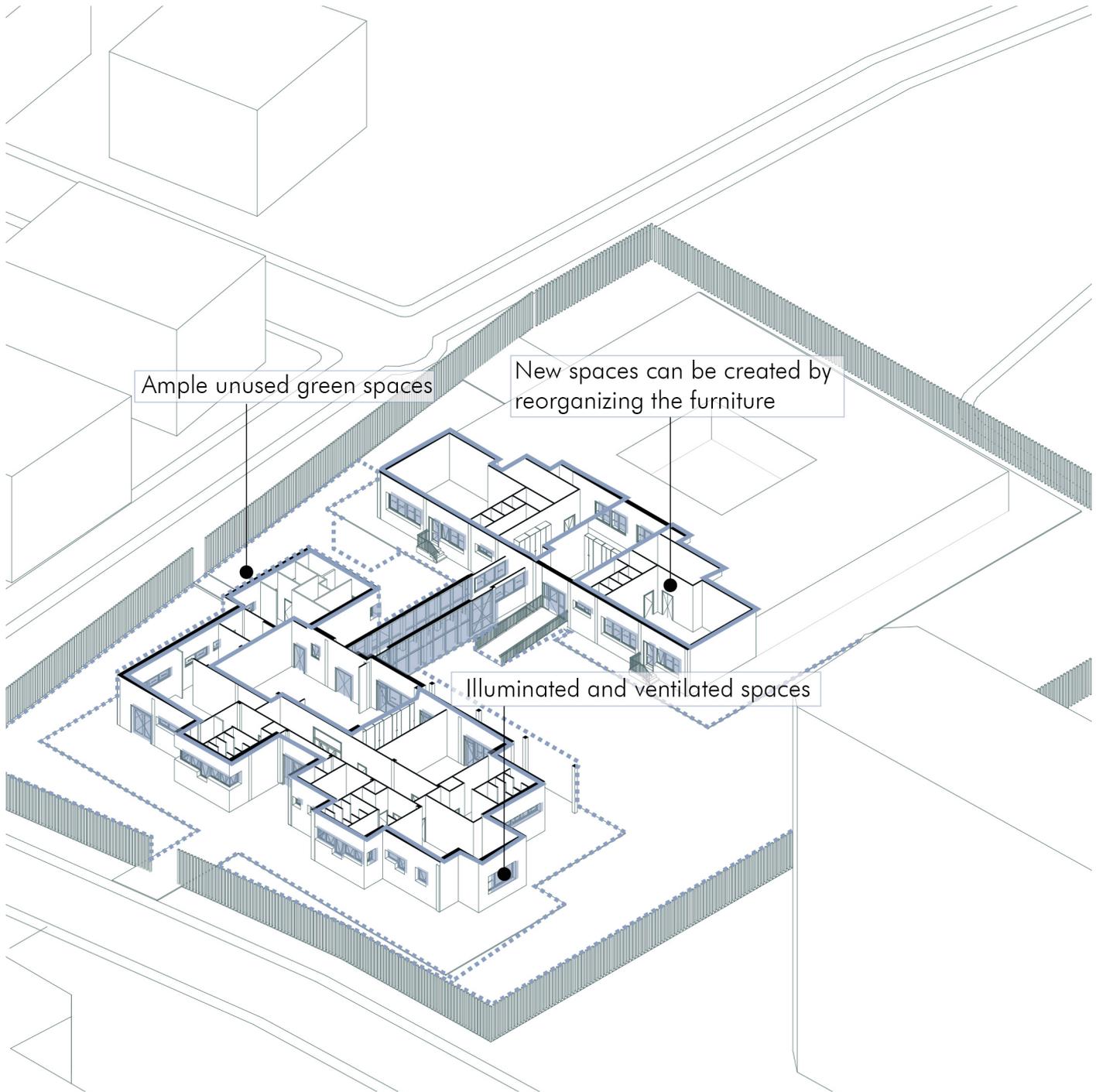




## PPORTUNITIES

And finally the opportunities that can be potential for new ideas and projects in the school, we find:

- The spaces are characterized by being illuminated and well ventilated, due to the number of windows and their location, which favors the control of odors and temperatures in the classroom and in the rest of the spaces, thus avoiding the generation of distracting stimuli for the children, especially for children with autism.
- Ample unused green spaces, allowing possible recreational activities for the children, where the multisensory stimuli of the environment could be used to generate diverse activities and areas to create visual and recreational experiences for the children.
- Due to the dynamic nature of the classrooms, new spaces can be created by reorganizing the furniture, solving the lack of calm spaces or sensory spaces that would respond to daily behaviors of children with autism.



Ample unused green spaces

New spaces can be created by reorganizing the furniture

Illuminated and ventilated spaces





Image source: provided by the students Maria and Antonia, in the visit to Casale Monferrato. September 2021



Image source: provided by the students Maria and Antonia, in the visit to Casale Monferrato. September 2021





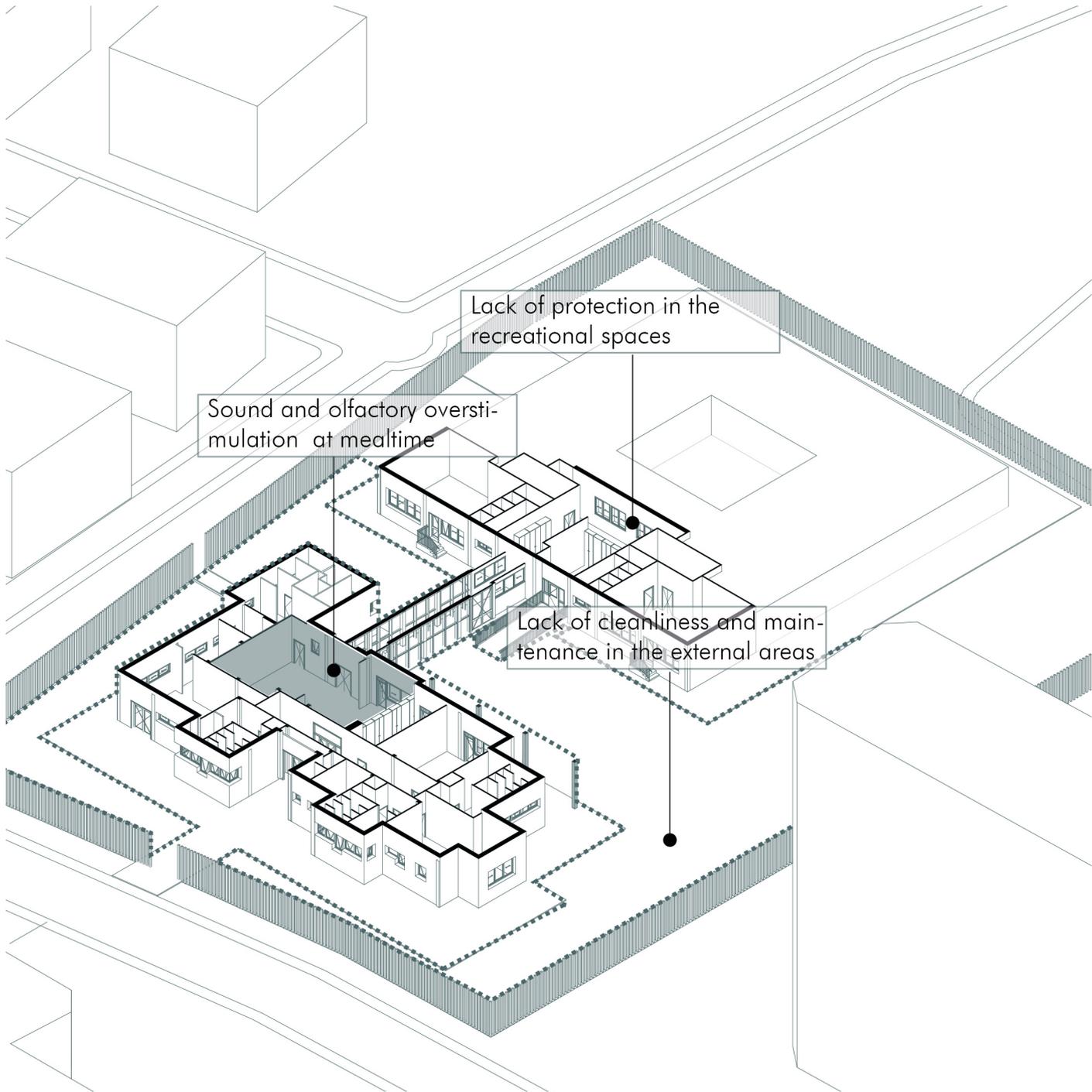
## THREATS

It is worth noting the threats found in the school facilities:

-There is a lack of cleanliness and maintenance in the external areas or green spaces of the school, preventing teachers from carrying out activities with the children in those areas to avoid any accidents.

-Lunch space: it is a space with sound and olfactory overstimulation for the inclusion of children with autism at mealtime, which generates that children with autism integrated in the school must eat at a different time with their small group in the classroom, distancing them from the rest of the school who all eat at the same time.

-There is a lack of protection in the recreational spaces, such as protection against bumps on walls or columns, thus being spaces that are not conditioned to give the children complete freedom of recreation.



Sound and olfactory overstimulation at mealtime

Lack of protection in the recreational spaces

Lack of cleanliness and maintenance in the external areas





Image source: provided by the students Maria and Antonia, in the visit to Casale Monferrato. September 2021



Image source: provided by the students Maria and Antonia, in the visit to Casale Monferrato. September 2021



## FUNCTIONAL RELATIONS

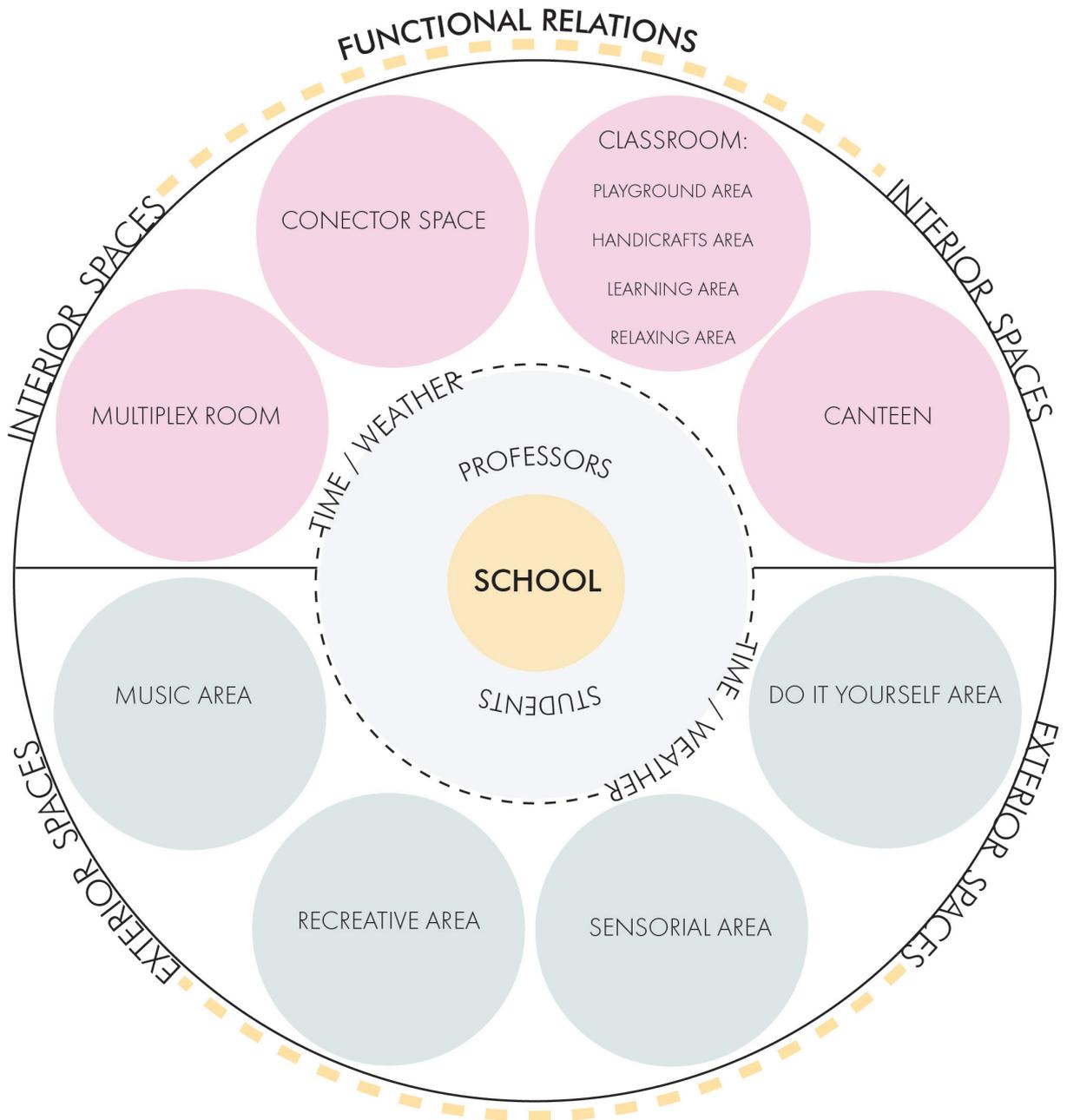
### **Internal and External Spaces**

We are looking to generate spaces that invite kids to play and learn from the objects and devices that are placed in them. Therefore, the objective is to improve, beautify and enrich the existing play and learning offers, from the generation of new play areas and the adequacy of the aesthetic quality of the spaces, both internal and external, to the needs of children and their learning.

The spaces can be organized with different sectors according to the function, for example, of motor games, as well as in relation to the corporal-expressive, others in function of mathematical games, or experimentation, or games with sound objects or visual arts productions.

In a school, the playground is perhaps the space most loved by the children and at the same time the most neglected; that is why looking towards it to improve it is gratifying for everyone and allows enriching the work of the different areas or fields.

Through the specifmood boards we can exemplify our clear objectives for each space.



## COLORS

According to the research, we understood that colors are not only essential for students with autism but all children equally because each one affects differently in the learning of children.

**They all influence the brain in one way or another.**

Using an appropriate color or combination of colors can encourage students by providing them with attention, tranquility, confidence, and concentration, according to what they need for the activity in that space.

**The following colors, according to color psychology, are the ones that benefit children's learning:**

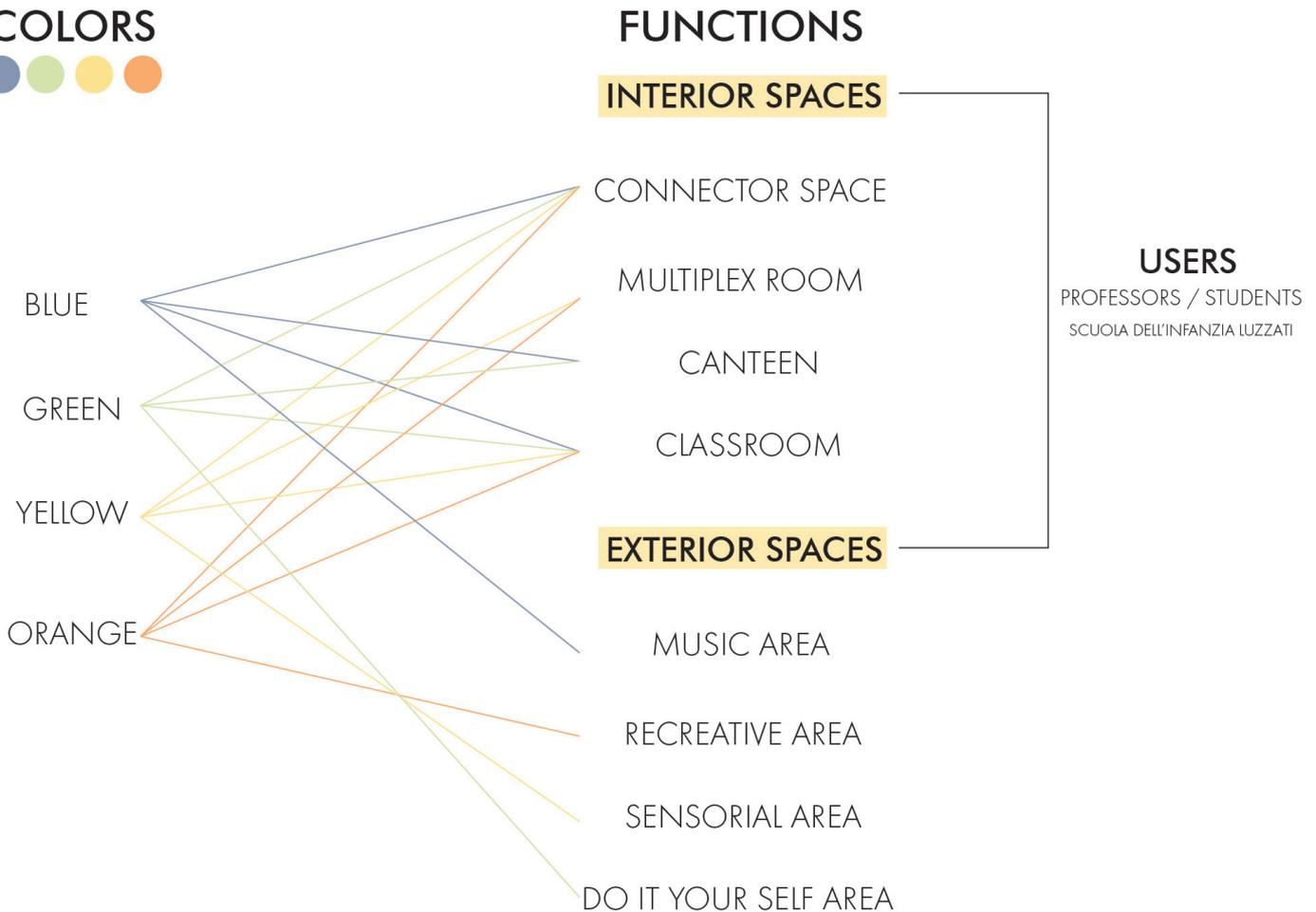
**Blue:** conveys tranquility, calmness, and sobriety; that is why it is used in higher levels to add that seriousness. It also helps reading comprehension. Light shades are best for achieving retention, but dark shades add elegance.

**Green:** focuses and retains concentration, plus it creates harmony in the environment, especially those pastel shades, like the one your elementary school was probably painted in. A low wavelength color gives the feeling of calmness and relaxation.

**Orange:** helps to oxygenate the brain, so it stimulates mental activity, and energy increases the students' mood. Still, it must also be used in combination to achieve the opposite effect.

**Yellow:** It is intellect and joy; this can help improve and stimulate mental functions such as memory; this can be a helpful tool when trying to generate retention of knowledge or make a boring subject more dynamic.

## COLORS



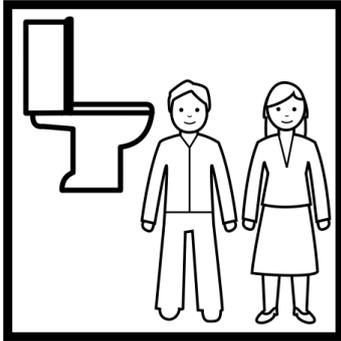
## PICTOGRAMS

Pictographic writing is a form of communication in which drawings convey ideas. Pictographs are used as symbols to represent concepts, objects, activities, or events through pictures.

Pictograms for children are a clear and schematic way of representing the activity to be performed or how they should behave in the indicated space, synthesizing a message that can signal or inform overcoming the language barrier.

People with autism usually have difficulties in language development and, sometimes, in communicative intent. In addition, they are visual thinkers; that is, they process images very well. For all these reasons, Augmentative and Alternative Communication Systems are one of the best means of communication with these people to stimulate oral language and, in any case, to provide them with an initial communication system.

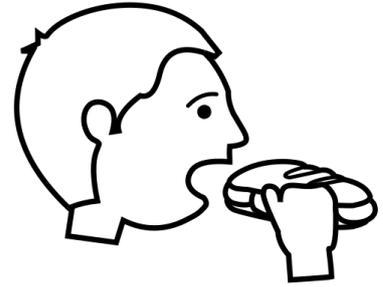
The advantage of these graphic symbols and images is that we can represent something concrete, something abstract with them. At the same time, they transform reality into images that represent "concepts," "ideas," "actions," or "elements that are part of everyday life,". Their legibility gives the comprehension of pictograms. Each pictogram is self-explanatory, and it is not strictly necessary that texts accompany it, nor must it be interpreted to be understood.



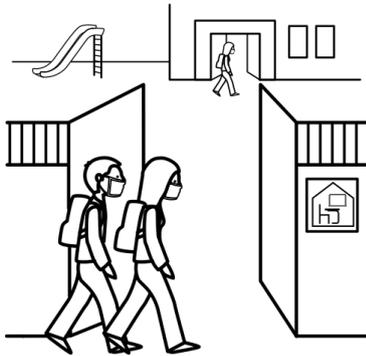
**BATHROOM**



**MUSIC**



**EAT**



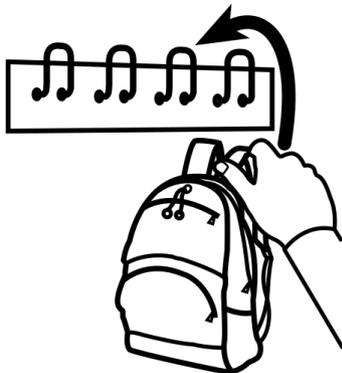
**ENTRANCE**



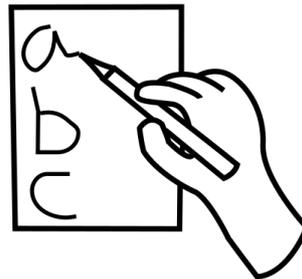
**REST TIME**



**ORGANIZE**



**HANG**



**STUDY**



**PLAY**

## MOODBOARDS

### CONNECTOR SPACE

The connector space was born from the analysis of this school's opportunities, as it has two buildings for children. However, between these two buildings, there is not much relationship between them. So the connection point is this bridge that we have that unites them; we decided it is crucial. We wanted the children to find it united with our four projecting colors, as it will somehow guide them of what they will learn in each classroom. We also found it a game as this connector corridor is also the main exit to the central outdoor playground.



Fig 13



Fig 14



Fig 15



Fig 16



Fig 17



### Connector space

Connecting core of our two buildings and main spaces through colors which generates a different and fun experience for each child.



## MULTIPLE ROOM

We decided to create two multiple spaces, which are the ones that receive the children when they pass through the connecting corridor. These two spaces are born with the idea of having internal auxiliary spaces that serve to replace either outdoor play spaces because the climate is not suitable for children to play.

Alternatively, common areas are needed for children who need a degree of isolation because they need a greater degree of privacy. These spaces can be expanded and become an ample space or be divided and have two separate rooms; we wanted these spaces, depending on the activity they had as a priority, to be assigned two colors of the four primary colors of the project. The selection of the furniture is made to have furniture adaptable to any activity that takes place in the spaces.



Fig 18



### Multiple room

Receiving space that generates a circuit between the two buildings through the connecting space.



Fig 19



Fig 20



Fig 21



## LUNCH ROOM

The lunch space is connected to the multiple classroom spaces since it is part of it, but its primary use is lunch. This space is projected in this way because currently, one of the main problems that this school has is that this specific space has many complications with sound and odors at lunchtime. Speaking in general terms for children with autism, we can see that these two problems cause them a particular irritation and stress, which causes them to be in a moment of stress and anxiety. For this reason, this space can be divided in two to have the ability to control the number of people in the area and generate a second place which can be used for children who need a quieter lunchtime. .



Fig 22



### Lunch Room

Space where every child can enjoy and at the same time learn from food, a changing space depending on the time of use.



Fig 23



Fig 24



## CLASSROOM

The classrooms decided to generate a strategy where we mainly used orange, yellow, blue, and green. With the analysis that we have done, each color causes psychological behavior in children; we decided to divide the classroom into four critical work areas. The first area will be the learning area identified with the green color that provides children an environment of concentration and focus. The second area that presents the room is the craft area, which we will represent with the yellow color, which is a color that provides a focus of learning, still, in a more fun way. The third will be the play area with the orange color, which generates the child is more active, and finally will be the blue area of relaxation where children will have an area where they can rest.



Fig 25



## Classroom

Classrooms full of fun and learning, where you can find everything you need for a fun learning experience for everyone.



Fig 26



Fig 27



Fig 28



We also created the classroom strategy to generate furniture located on the periphery of each wall. It will be the ones that will keep the objects of each activity; these will be fixed tables in which things will help to perform each action. Different types of pictograms and signage will be generated on the walls, which will indicate to the children which activity is performed in each space. These signs will be shown with the respective colors of each area assigned by activity.



Fig 29



Fig 30



Fig 31



## PLAYGROUND AREA

The color orange characterizes the play area, it will be presented in the painting of the walls, the pictograms, and the furniture used.

For this area, we have the idea of choosing foam rubber furniture, which the children can use as a mat as an obstacle mode to jump, have fun, cut out, and do others activities.

Children will also find different games that will help them distract and have fun recreationally and adequately.



Fig 32



Fig 33



Fig 34



**Playground Area**  
Main color: Orange



Fig 35



## HANDCRAFT AREA

We found the handcrafts area, characterized by the yellow color; in this area, children will find furniture to perform activities such as painting, drawing, and other activities. It will be characterized by an area where the children learn through art and creativity; imagination will guide all these activities. It is proposed that some of the furniture be made of wood or recycled materials, which will also show them how handicrafts can generate different products.



Fig 36



Fig 37



Fig 38



**Handicrafts area**  
Main color: Yellow



Fig 39

## LEARNING AREA

The learning area is an area that will focus on creatively showing learning since the proposal is to implement furniture such as boards where children can draw and see the explanation of their teachers in an illustrated way. It is also proposed to make the auxiliary furniture in a house since they will also learn activities used later in their homes. On the other hand, furniture will be generated which will be used as a reading area, where the teacher and the children can perform this activity comfortably.



Fig 40



Fig 41



Fig 42



**Learning area**

Main color: Green



Fig 43



## RELAXING AREA

The relaxation area was designed because every child between the ages of 3 and 6 needs to rest between the activities. It can be highlighted more in children with autism syndrome because they need these moments of rest to have better behavior. They also need a relationship space when they have a problematic behavior caused by some external problem. In this area, we propose a blue color, which generates tranquility, and we offer to have a room full of mats and pillows, which makes the child understand better the behavioral theme.



Fig 44



Fig 45



Fig 46

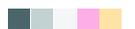


**Relaxing area**

Main color: Blue



Fig 47



## MUSIC AREA

The area of music can be used as a pedagogical resource to promote intellectual, motor, and language development in children through the strengthening of cognitive processes such as memory, attention, perception, and motivation.

It allows them to develop their musical skills through play and socialization among their peers.

Understanding the lack of structure in the school playground, we proposed several areas where the purpose is to reinforce learning and develop their abilities through play, in this case, with music.



Fig 48



**Music Area**

Main color: Blue



Fig 49



Fig 50



Fig 51



## RECREATIVE AREA

The recreational area was included among the spaces proposed for the school's outdoor room because it is a space where children can develop and reinforce their social and creative skills, interacting through play with their peers.

Provide it with two types of areas, a more fixed one with play furniture such as slides, swings, and others, and a more flexible area around it for creative games, such as drawing with chalk on the floor or playing with a ball.

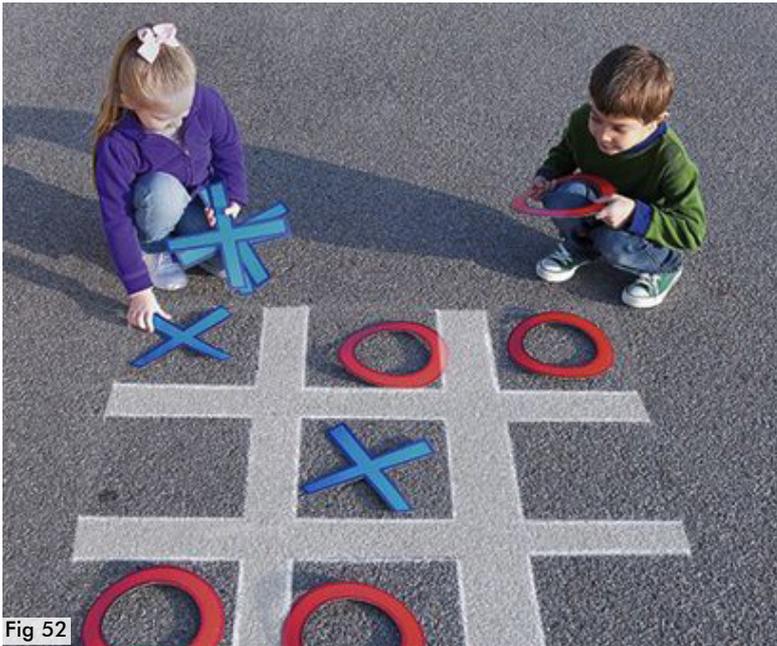


Fig 52



**Recreative Area**

Main color: Orange



Fig 53



Fig 54



Fig 55



## SENSORIAL AREA

This space was designed to provide children with a space to take an exciting journey through the senses, increasing awareness and providing positive learning experiences for their development.

It is a park and a space with a variety of activities that invite interaction and exploration.

The objective is to take advantage of the child's sensory capacity to the maximum, stimulating each of the senses through different textures during the tour of the sensory area.



Fig 56



Fig 57



### Sensorial Area

Main color: Yellow



Fig 58



Fig 59



Fig 60



## DO IT YOURSELF AREA:

This area was included to provide a space for the child to develop their skills in daily life activities, learning different things, such as planting, for example, and thus guide them in learning to do things independently but with some control from the teachers.

It also allows children to take an exciting journey through the senses, increasing awareness and providing positive learning experiences for their development.

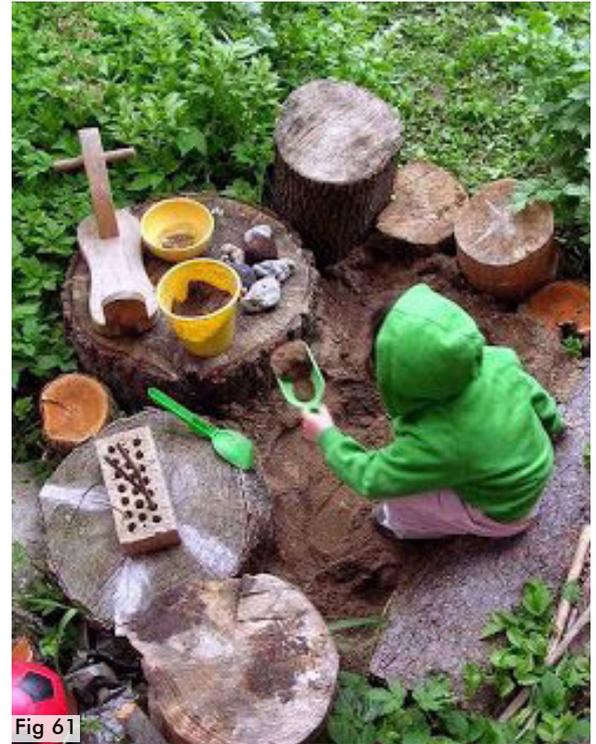


Fig 61



Fig 62



Fig 63



**Do it yourself Area**

Main color: Green



Fig 64

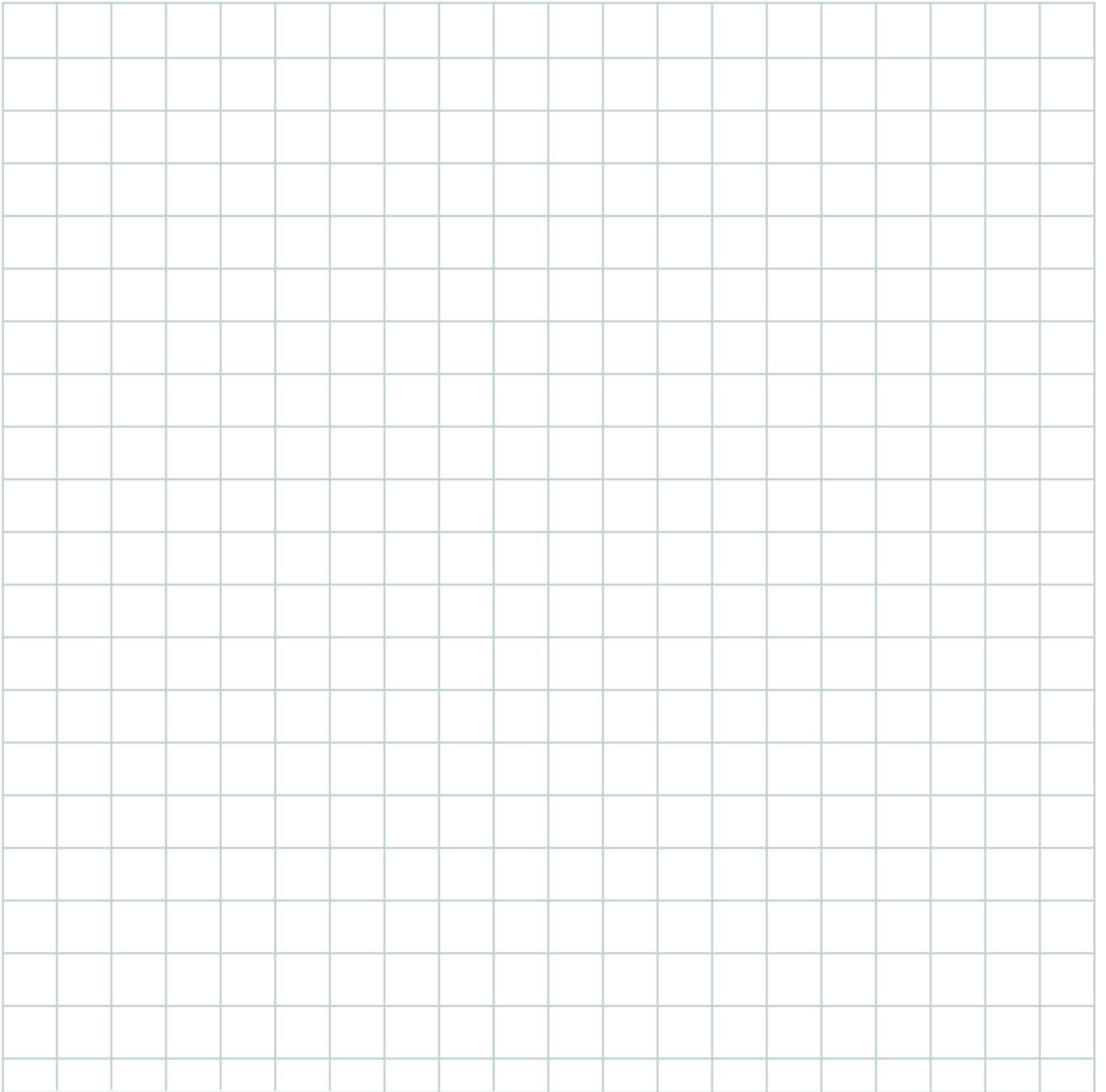


Fig 65



Fig 66





SCHOOL SCALE  
**CONCEPT**



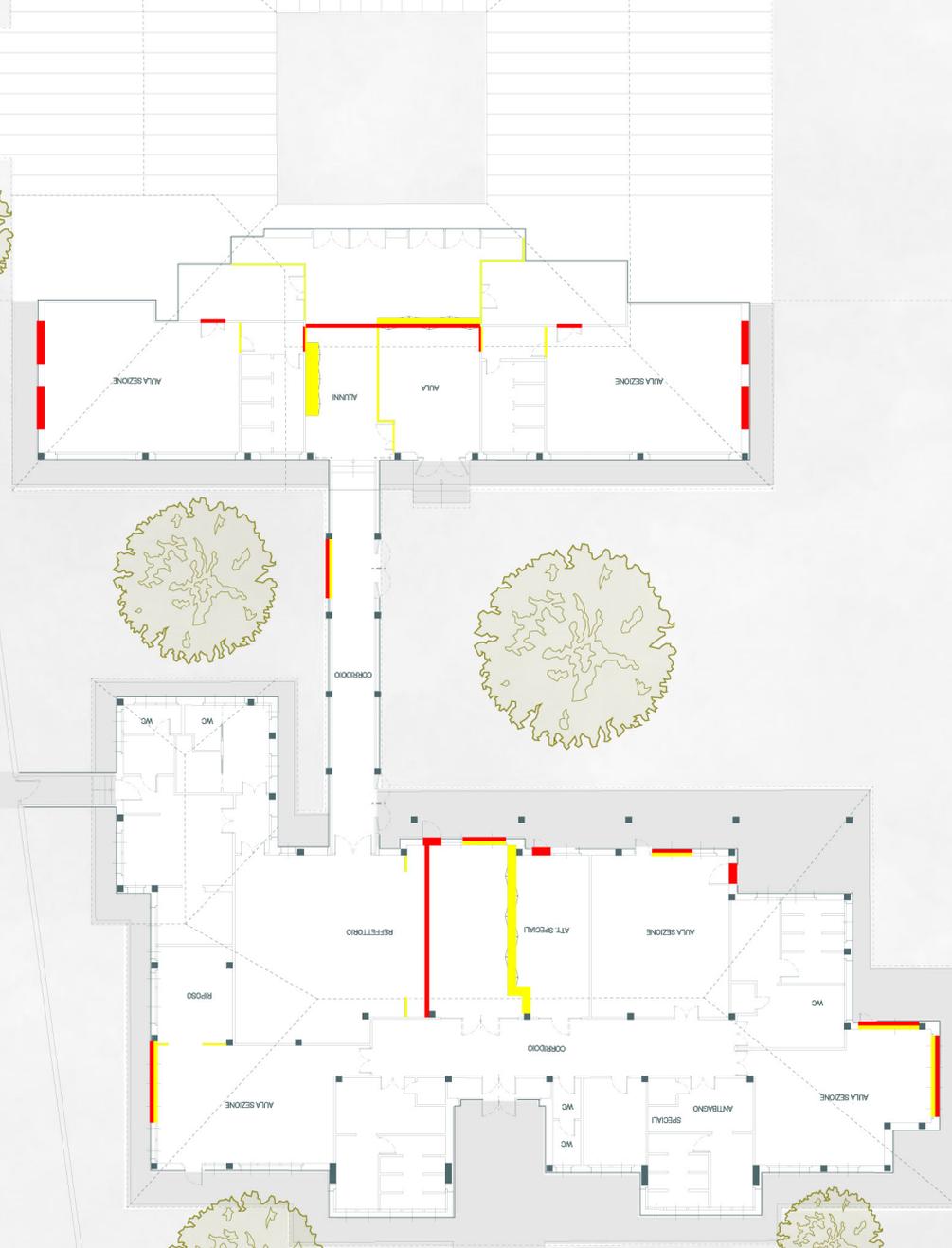
## DEMOLITIONS AND NEW CONSTRUCTIONS

For the proposal of the project, some distribution changes needs to be done in the school, but since they were few, they did not generate a significant impact on the school installations.

In the following map, you can see in yellow the proposed demolitions and in red the new constructions.

These changes are proposed to have a better performance of the school installations, so the proposed demolitions range from elimination of non-structural walls but of divisional use, replacement of windows by doors, and those of lesser impact, which is the removal of furniture that is used for the division of spaces.

As for the new constructions, they are based on the building of new walls to allow the reorganization of the internal spaces and the modifications of some doors and windows to improve some of the accesses of the classes to the outside area.



**CONSTRUCTIONS**

● DEMOLITIONS

● NEW CONSTRUCIONS

10

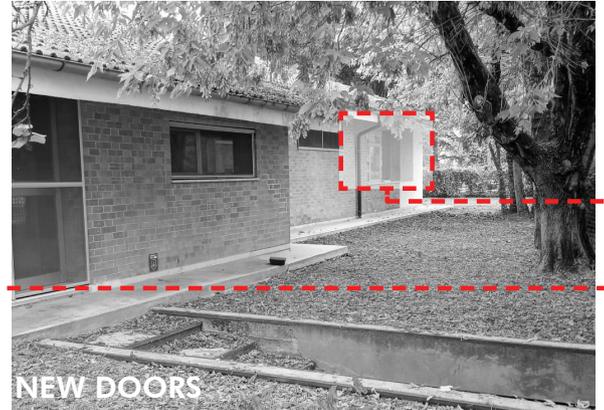
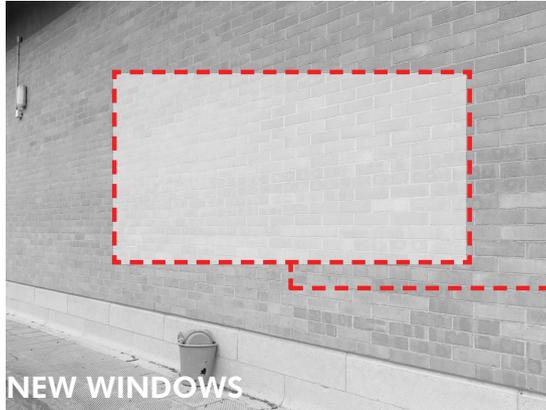
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40



## DEMOLITIONS AND NEW CONSTRUCTIONS

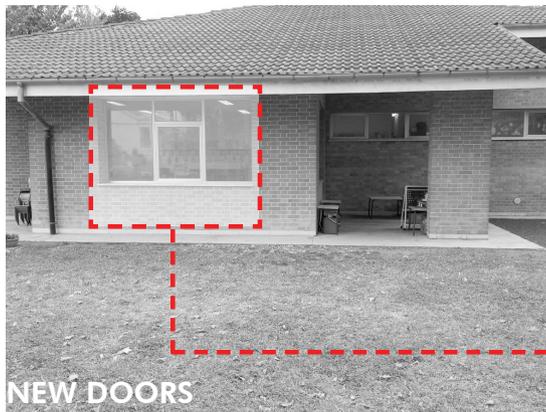
### EAST FACADE

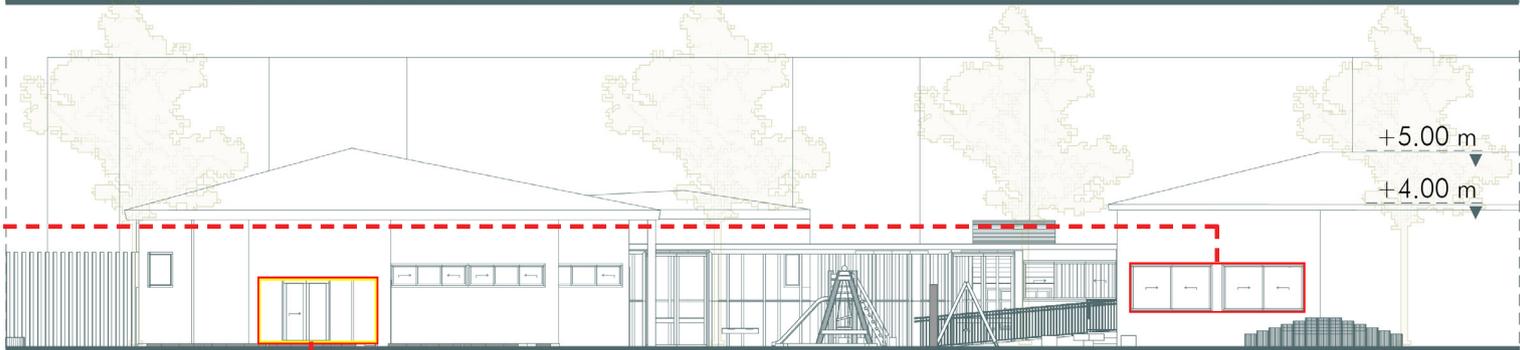
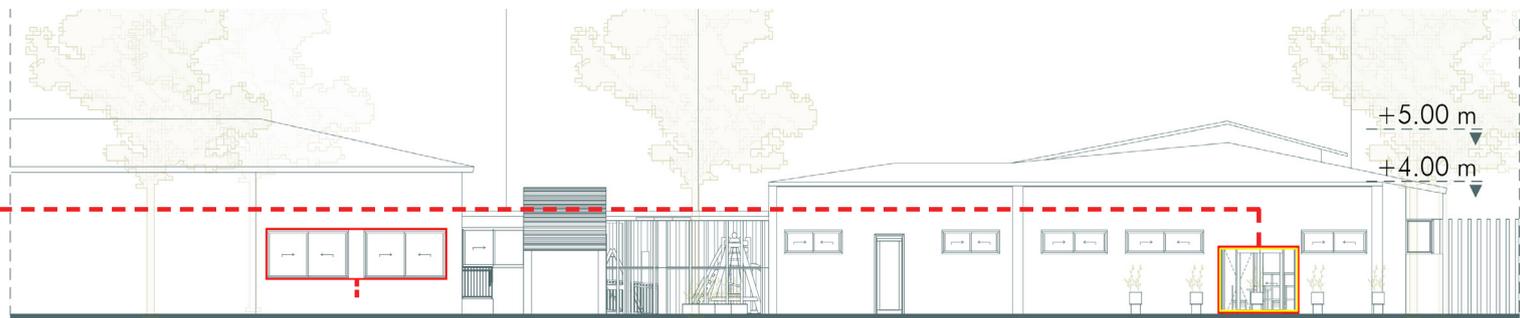


**EAST FACADE**  
the main facade  
is kept as it was  
initially.



### WEST FACADE





### CONSTRUCTIONS

● DEMOLITIONS

● NEW CONSTRUCTIONS

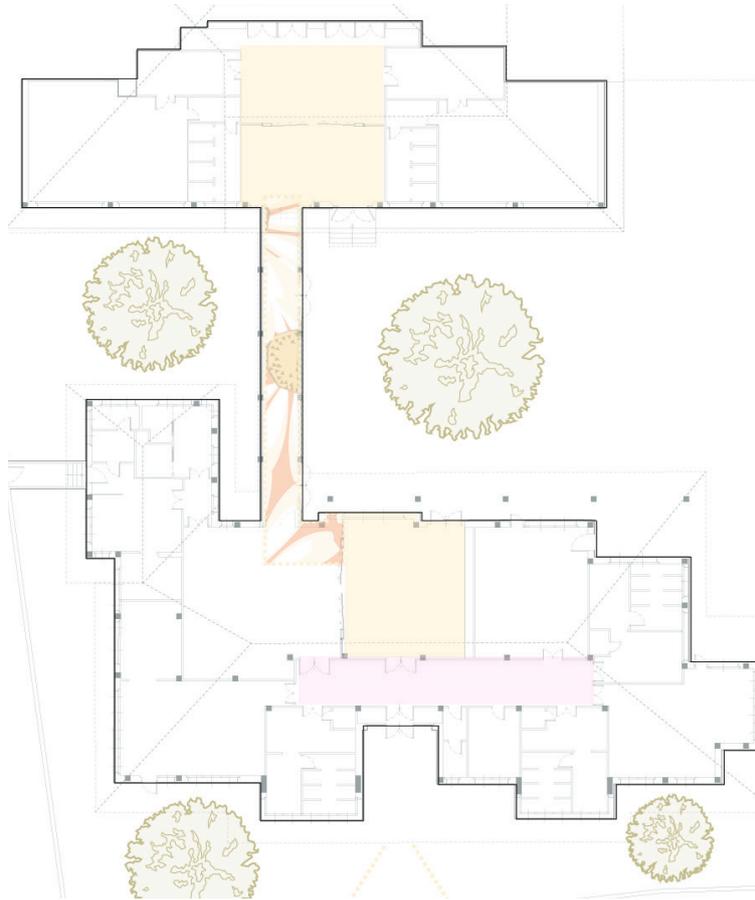
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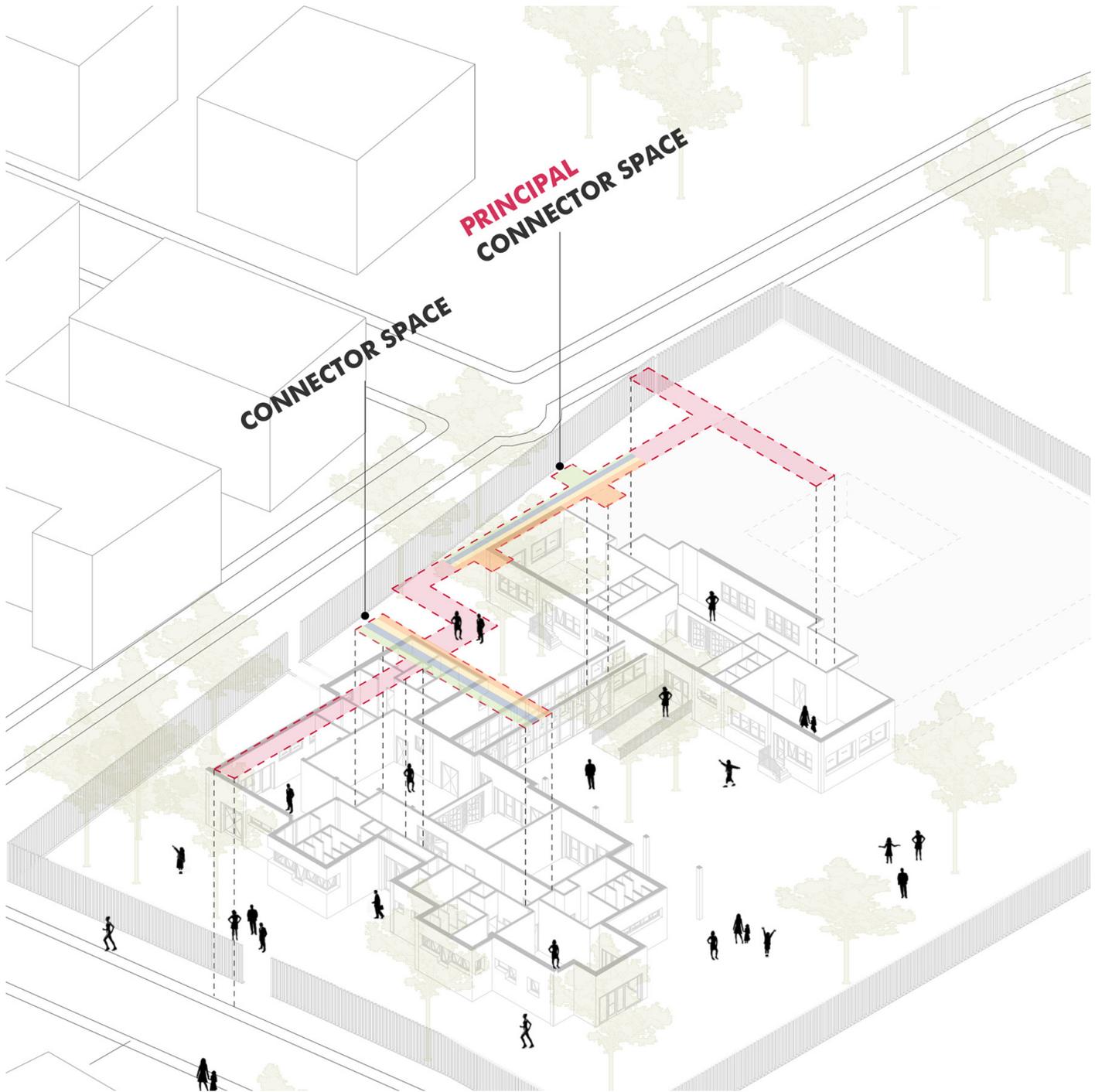
## PRINCIPAL CONNECTOR SPACE



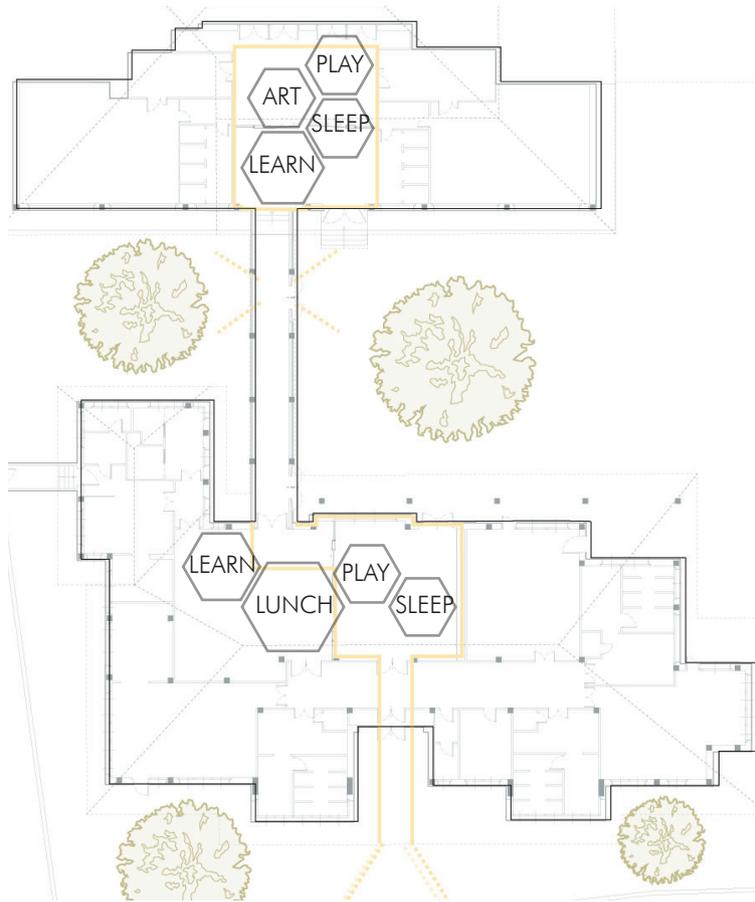
We created this corridor as the main connecting space of our project want to design it in a fun way for the children since it is the space that connects all the essential areas of the school.

In addition to this, there is a secondary one: the main entrance hall.

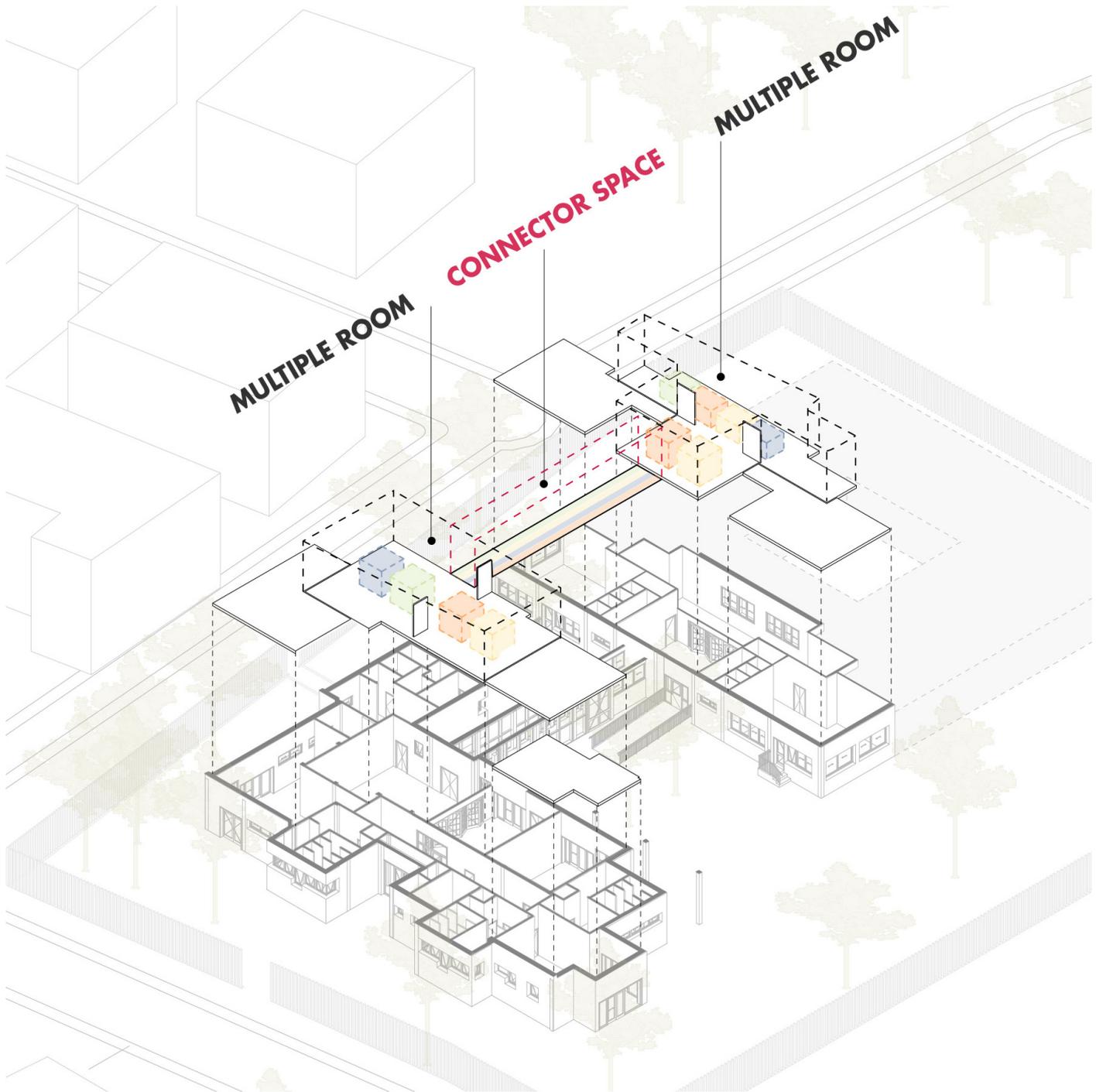
These spaces will be characterized by the color pictograms and the signage found on the pavement in a fun way.



## MULTIPLE SPACES



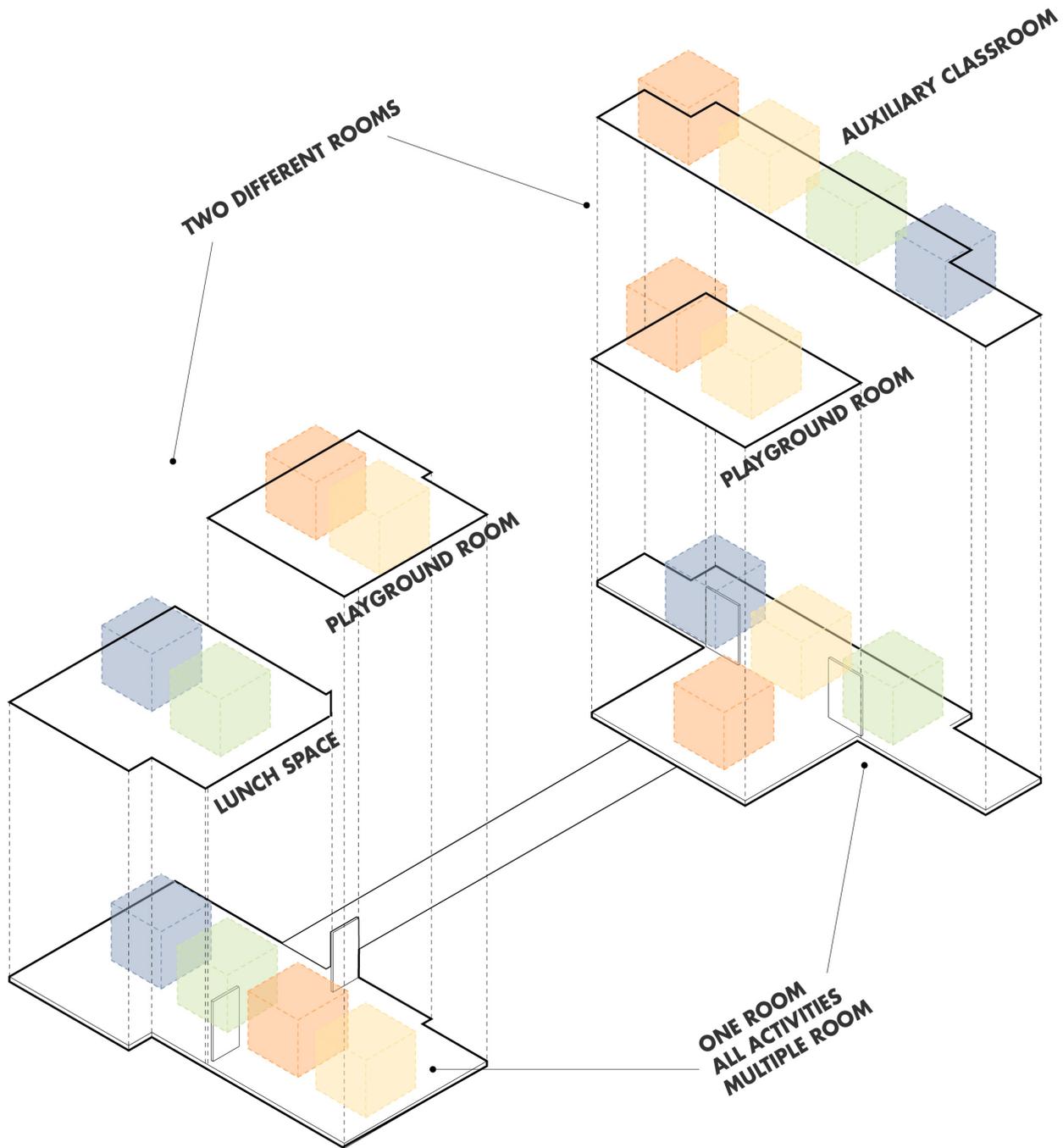
There are two main spaces which receive the children from our main connecting spaces, we will give these spaces the character of multiple classrooms since each one will have a main activity but may have the opportunity to expand the space or generate different types of activities according to the needs of teachers and children.



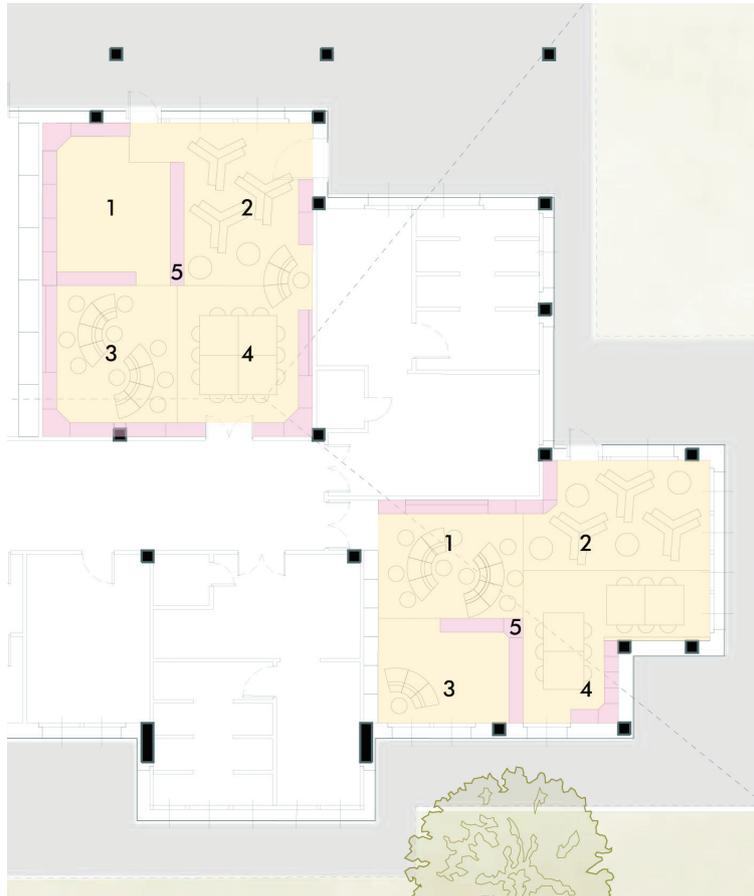
## CONCEPT OF THE MULTIPLE SPACES

The first multiple spaces that we find are the lunch space and the play area; these will be the main activities of this space that can be divided by a sliding door. According to the analysis that was done before, we can see how at present the lunch space is one of our main problems because, at the time that all the children eat, noise and odors problems are generated, this for a child with autism spectrum makes him be in a situation of anxiety.

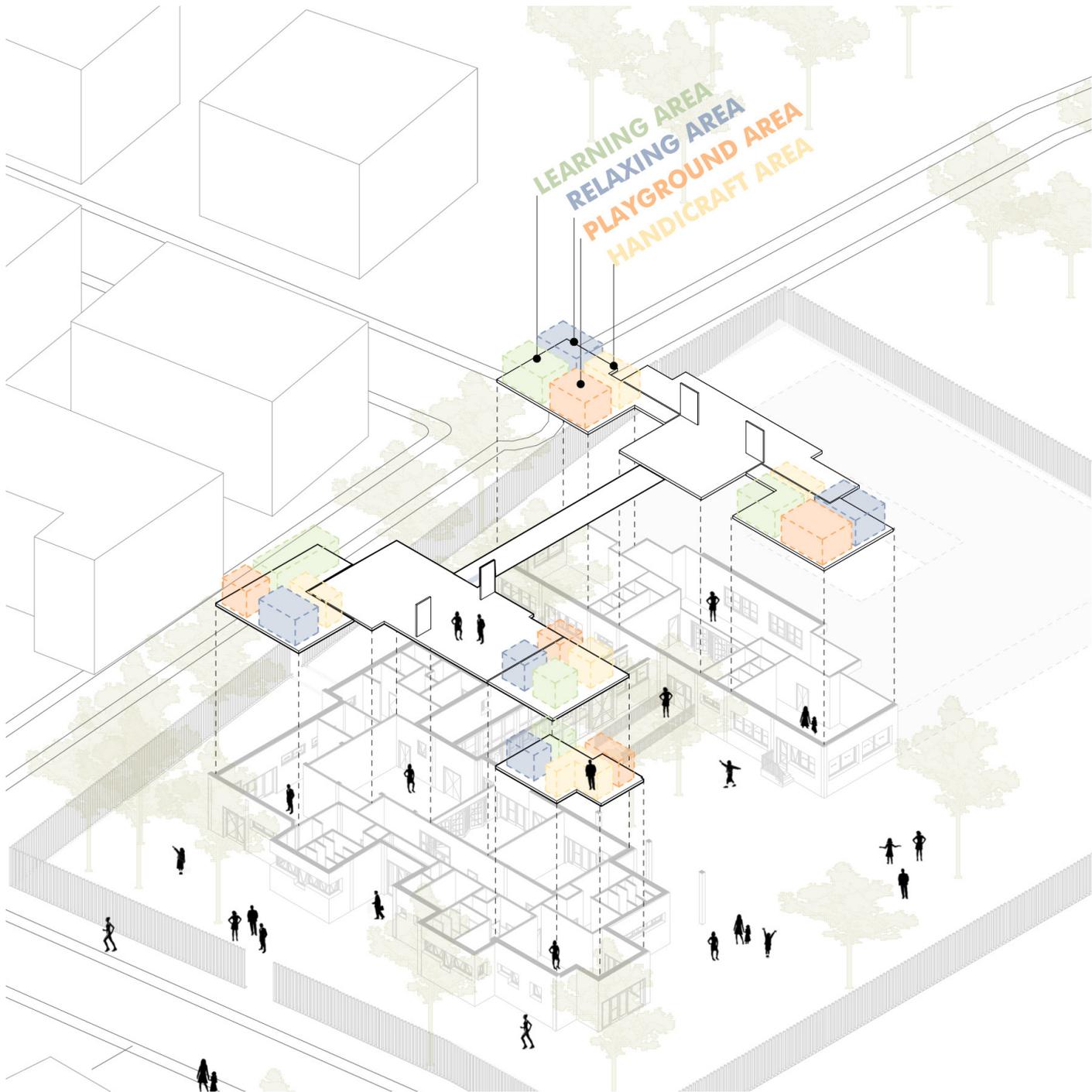
For this reason, if you need to have two separate lunch spaces simultaneously, this space will provide it. It is similar to the second space, but this will be dedicated as additional classroom support to the two classrooms in the second building and as a play space for the coldest or rainiest days.



## CLASSROOM SPACE



In the area of the classrooms, it was decided to divide the classroom into four main activities, each with a color assigned according to their characteristics; these activities will be flexible at the time that the teacher decides which one to do, but a strategy of fixed perimeter furniture that supplies the material for each activity is made.

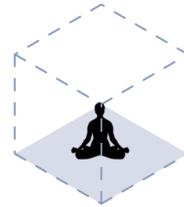
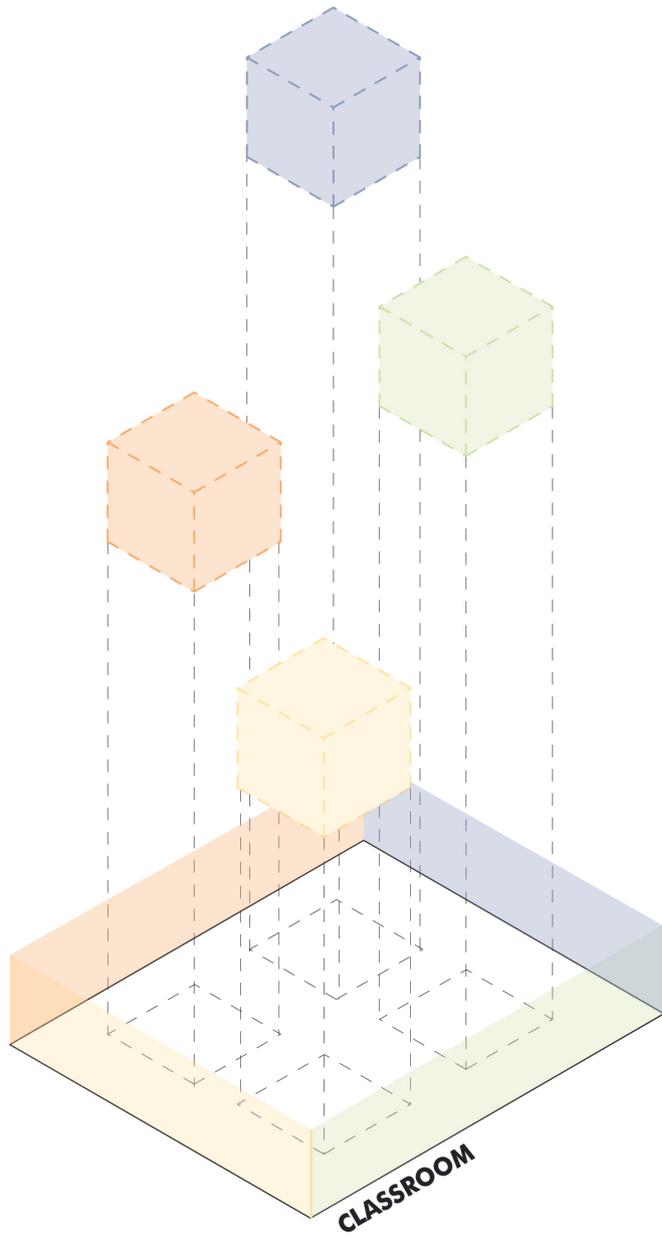


## CLASSROOM CONCEPT

The central concept of the classrooms is based on our four primary colors; we want children to learn through these four colors, which will help them associate learning with the color of each activity.

These colors will be the ones to recognize each area; from the furniture, we will use and the pictograms, we decided only to implement the color in these specific things not to saturate the child with so many colors. We chose four colors divided into two categories, one with more physical activity and the other with more passive activity.

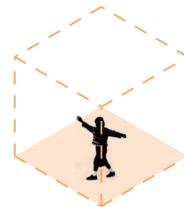
The colors of the first category are orange and yellow, which activate people, so they will be dedicated the orange, which is a more vibrant color to the play area, and yellow, which is a little calmer to the creative space of crafts. In the second category, we find the colors blue and green. The green will be dedicated to learning as it is a color that focuses you quietly in the activity and provides concentration to the child. In contrast, the blue generates a lot of tranquility for the rest area.



RELAXING AREA



LEARNING AREA



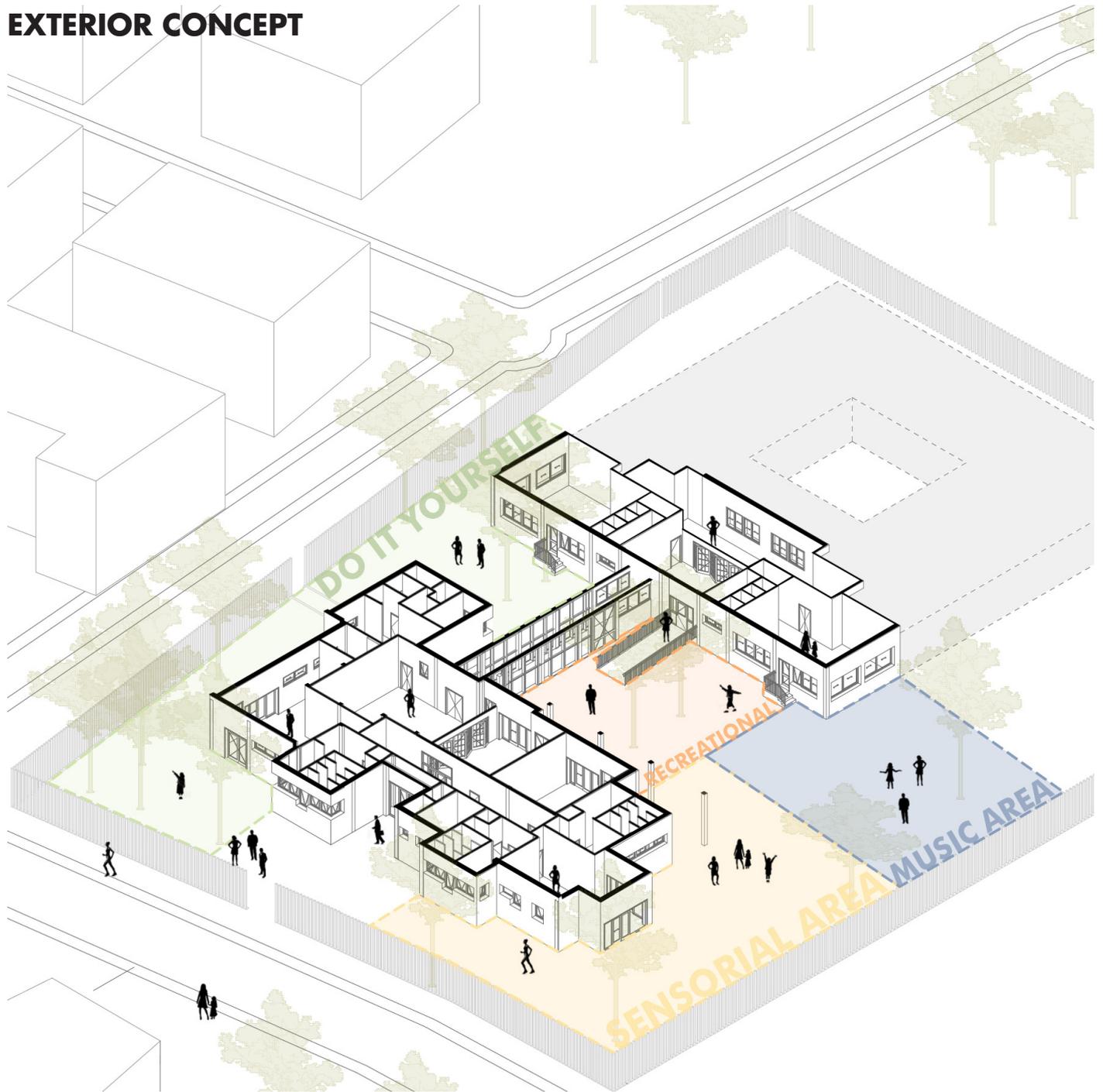
PLAYGROUND AREA

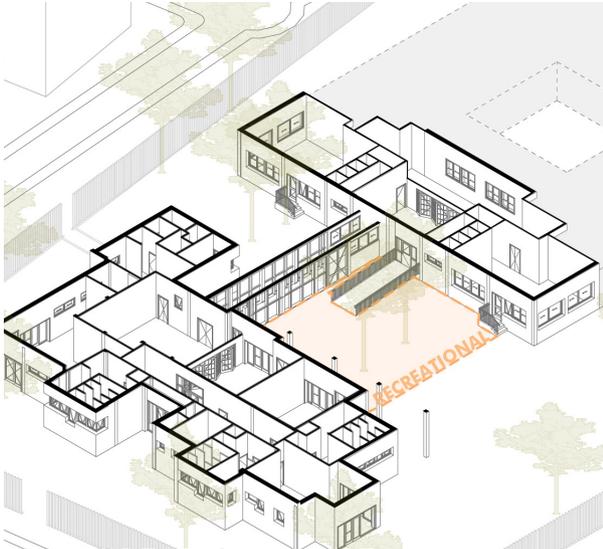


HANDICRAFTS AREA

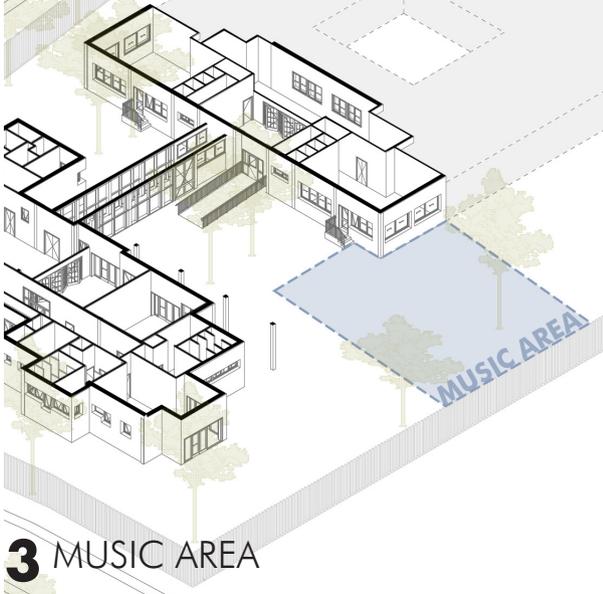


# EXTERIOR CONCEPT

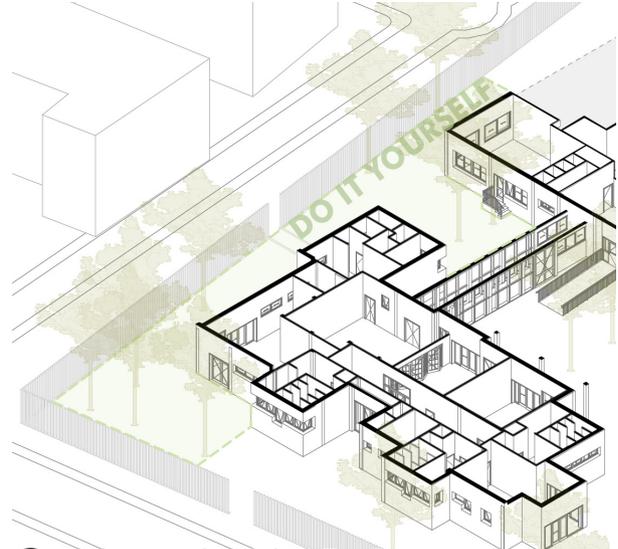




**1** RECREATIONAL AREA



**3** MUSIC AREA



**2** DO IT YOURSELF AREA



**4** RECREATIONAL AREA



We found the general proposal for the school in the following master plan, where we can see both the internal design of the school, mainly the circulation spaces, the multiple classrooms, and the classrooms since in our main objectives, these were the spaces that we chose to intervene since according to all the research analysis are the areas that children spend the most time in school. Concerning the external area, we decided to intervene, creating different zones of games since we realized that not all the children learn in the same way. Some can exist more by the sensorial part and another by the auditory domain. Both the internal part and the external part share the connection concerning the meaning of the colors that we propose and also has a physical connection since there is the possibility of a direct relationship between the interior space with the exterior; this was generated thanks to the intervention of the facades that we developed that later will be able to be seen.

# MASTER PLAN

SCALE 1:200



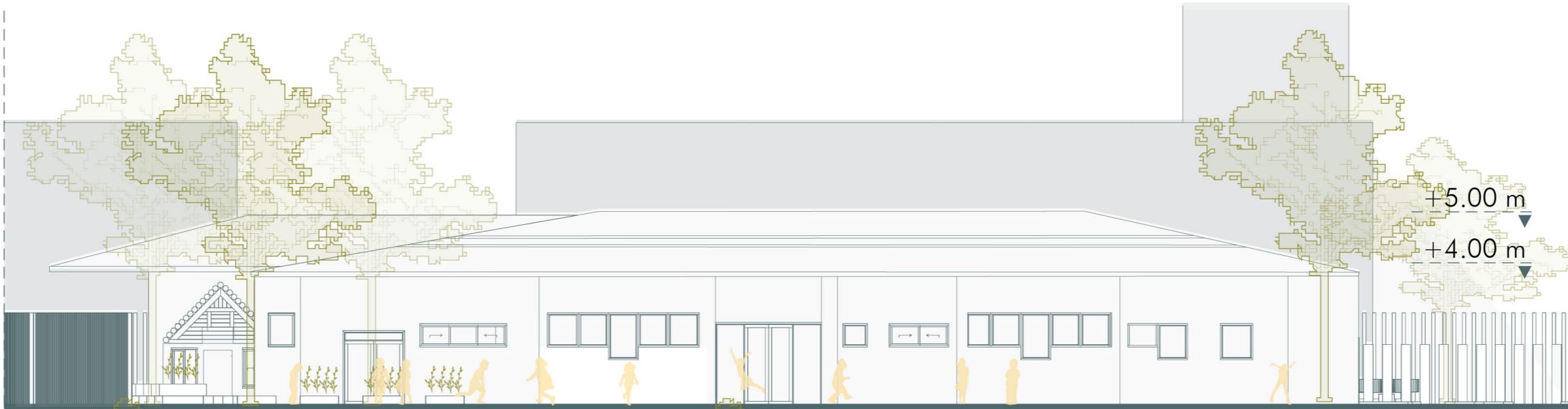
We decided to intervene in the facades subtly because we did not want to generate interventions that would be difficult for the school; thinking about its economic disposition; for that reason, we proposed new window doors and new windows in the classrooms, as they were strategically placed.

With this, we have been able to have the connection with specific internal spaces which can be used in times of good weather, as they will allow for example to perform the activity of the game both inside and outside, as well as the learning area can be expanded by generating an outdoor reading area.

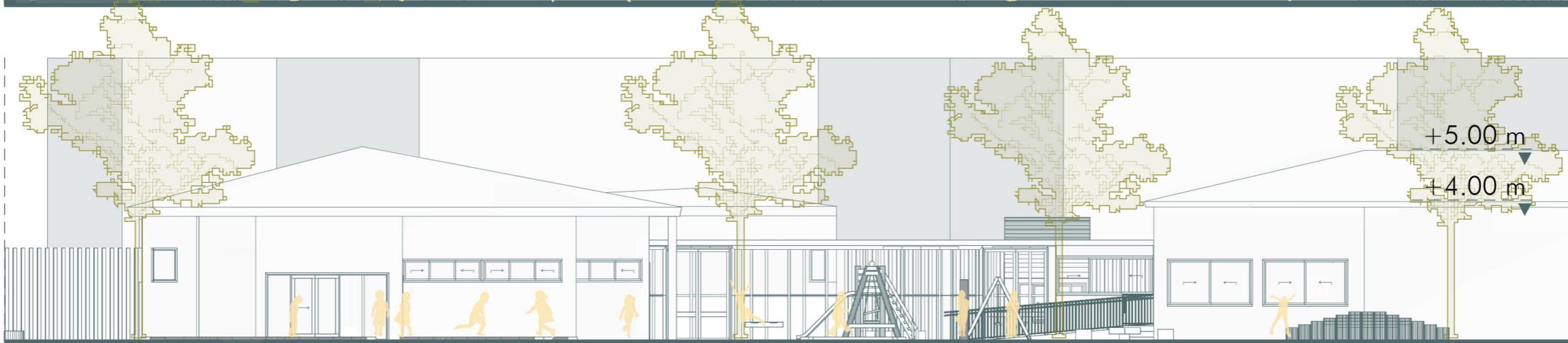
**EAST FACADE**  
SCALE 1:200



**NORTH FACADE**  
SCALE 1:200



**WEST FACADE**  
SCALE 1:200



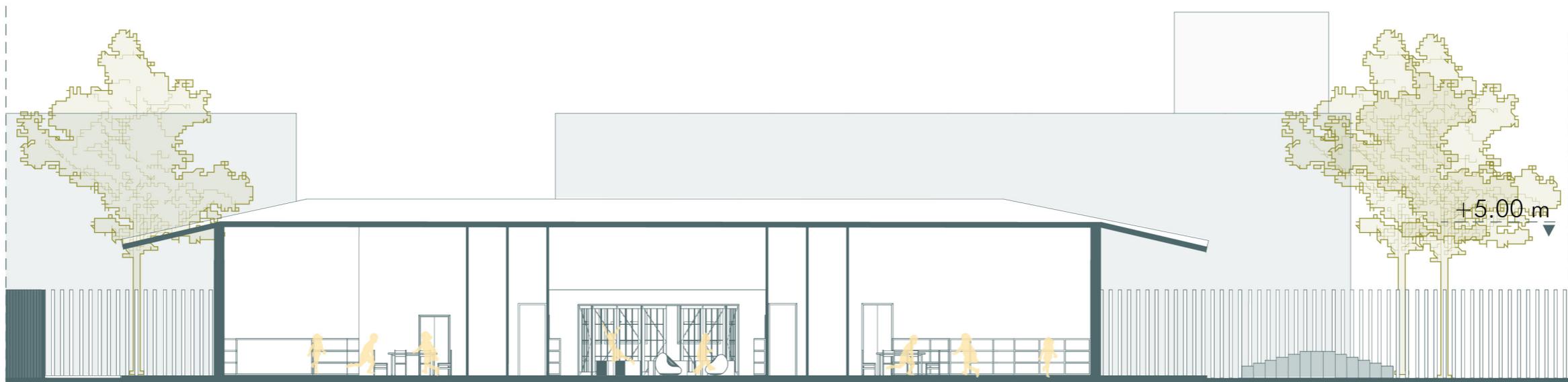
The following sections of our project proposal show the proposed spaces in the classroom, multipurpose rooms, and patio.

We can observe the activities in the classroom in section A and this as it has a relationship with the playground area, likewise we can see in paragraphs b and c, as you can see the folding door in the multiple classrooms which will divide this space, here we can see how it would be at the time we have lunchtime so you can see closed as it divides this space in two to control the excess sound and isolate children who need a quieter environment.

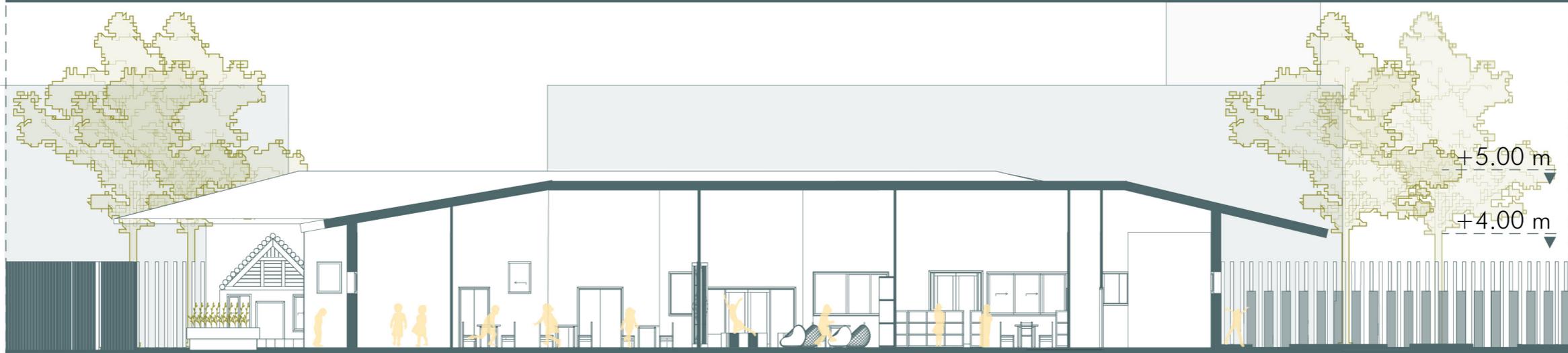
**SECTION A**  
SCALE 1:200



**SECTION B**  
SCALE 1:200



**SECTION C**  
SCALE 1:200



## INTERNAL-EXTERNAL CONNECTION

In this plan, you can see the connections that can be found between the interior and exterior spaces as it is connected by window doors which allow the activity space to expand. Activities also bind them since the same four strategic colors were used both inside and outside; you can see how the external activities close to the internal activities with the same user could be connected on appropriate days so that teachers can generate more activities outside for educational purposes and not only in the hours of rest of the child.



A

B

+0.54 m

+0.00 m

C

10

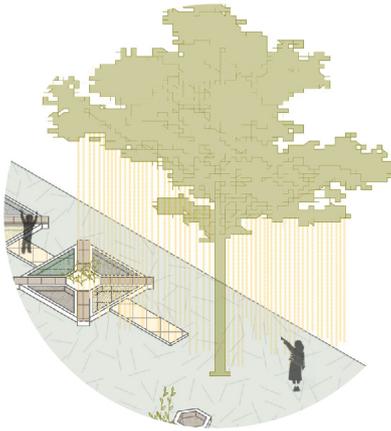
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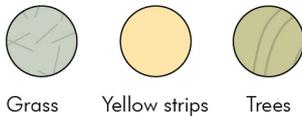
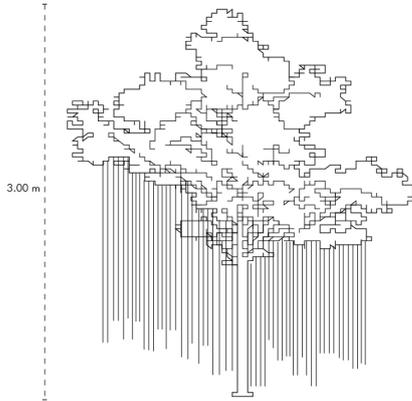


## EXTERIOR SPACES-SENSORIAL SPACE



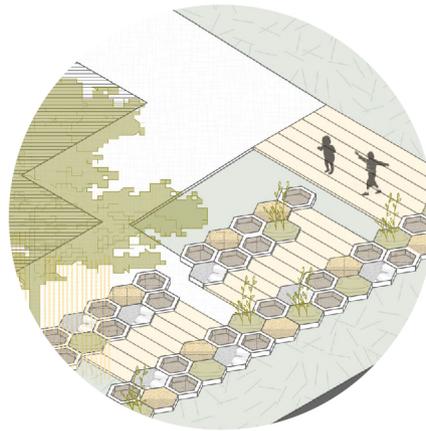


**Furniture Type 1**

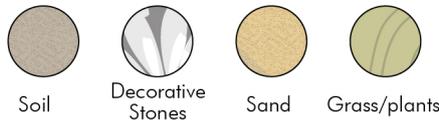
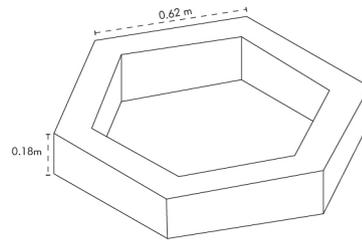


### Description

The placement of the colored ribbons on the trees is part of the sensory games being activities that are carried out in order to motivate the imagination, enhance skills, relate to the outside world and help him to be able to channel his mistakes.

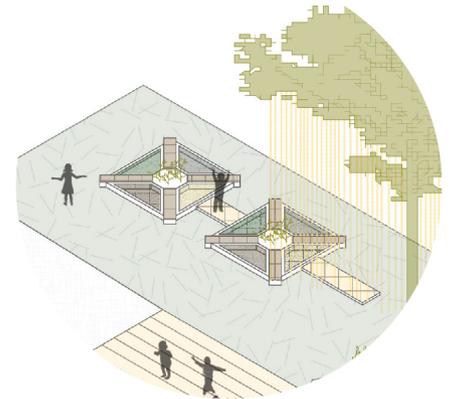


**Furniture Type 2**

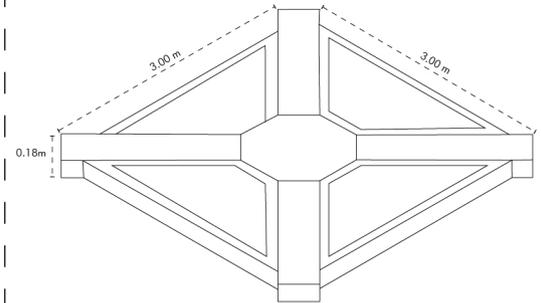


### Description

The area is a path that allows children to enjoy a wide variety of sensory experiences, with the purpose of being interactive and stimulating through touch, sight, and sound, to receive all kinds of information from our environment.



**Furniture Type 3**



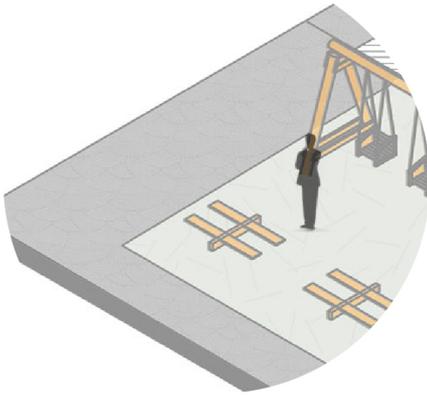
### Description

It is an area with different textures, which can be perceived through touch, which invites interaction and exploration, developing sensory stimulation.

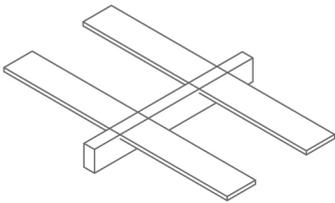


## PLAYGROUND SPACE





**Furniture Type 1**



Exterior flat latex black paint



Grass



Exterior flat latex orange paint

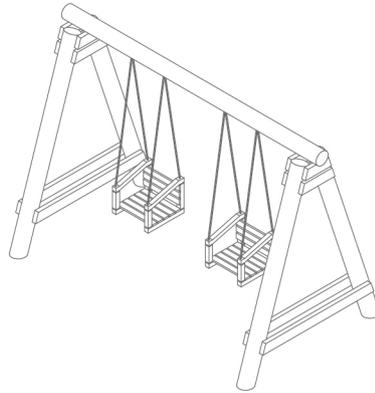
### Description

Children's entertainment, consisting of a long metal or wooden bar with seats at its ends and supported at its midpoint.

The zone with the black paint is for express creativity and play streets games.



**Furniture Type 2**



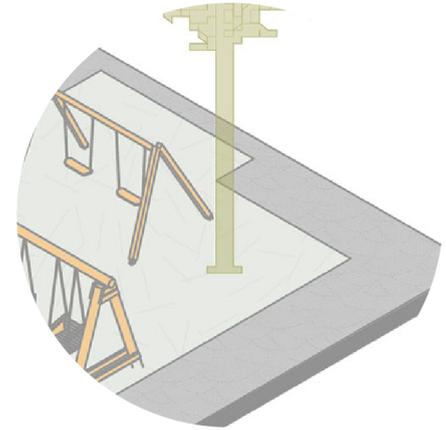
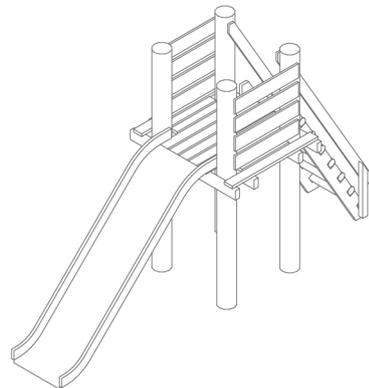
Exterior flat latex black paint



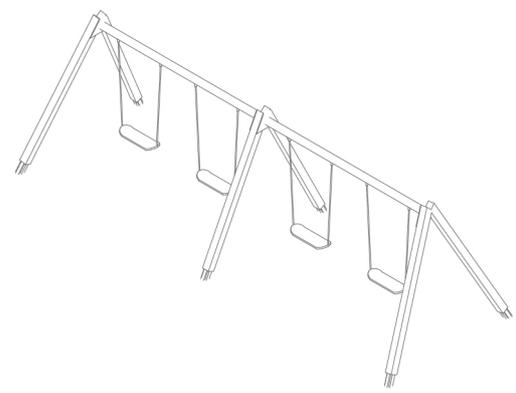
Grass



Exterior flat latex orange paint



**Furniture Type 3**



Exterior flat latex black paint



Grass



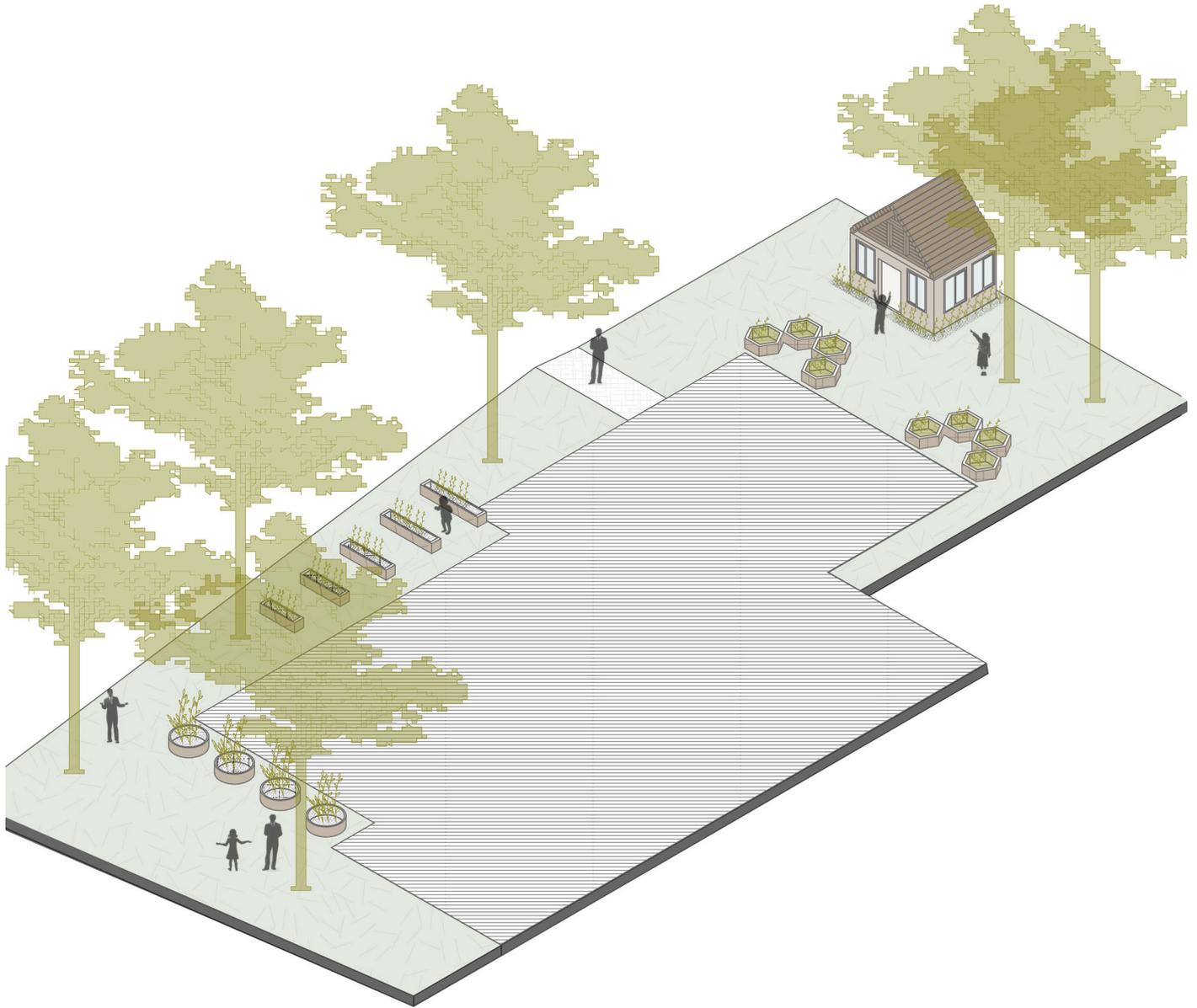
Exterior flat latex orange paint

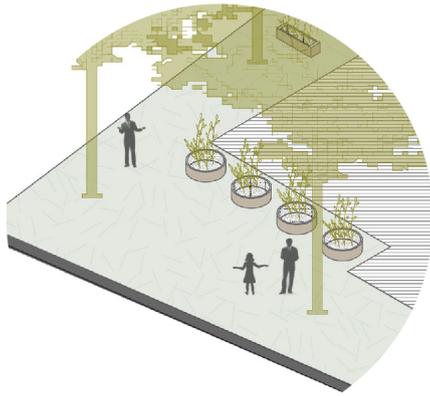
### Description

Inclusive recreational space specially equipped for free recreational activities, including children's games such as swings and slides.

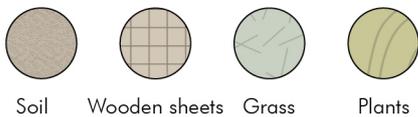
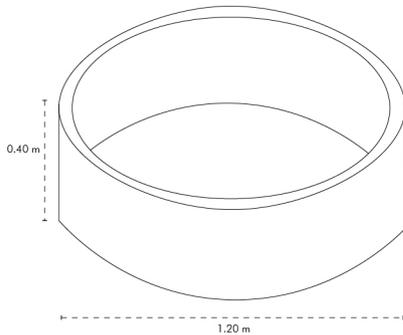


# DO IT YOURSELF SPACE



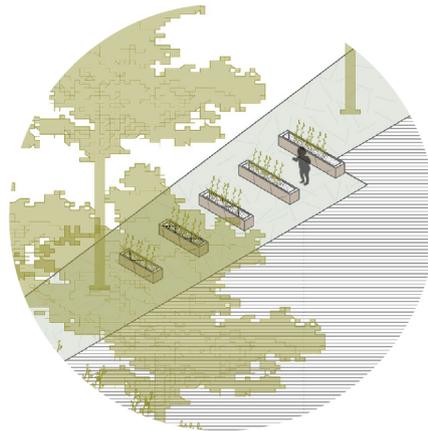


**Furniture Type 1**

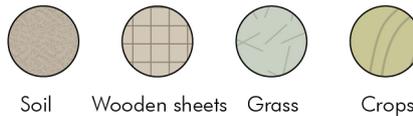
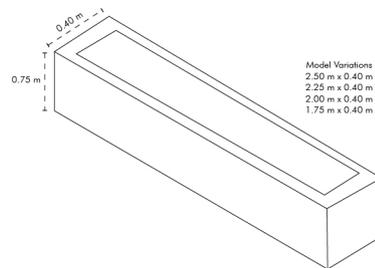


**Description**

A circular and modular planter to generate spaces to teach children to plant, allowing them to do it themselves due to the comfortable height they have.



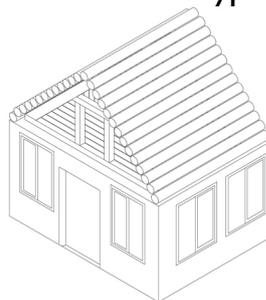
**Furniture Type 2**



**Description**

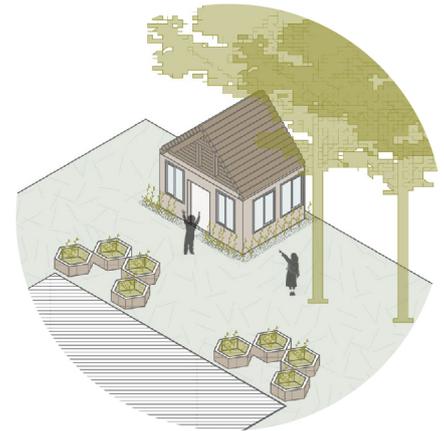
Two types of planters, where both have the same purpose, the independence of the child to do activities such as planting. These differ in the height they have, due to the diversity of options for planting, its design is set to organize the children in a simple and individual way.

**Furniture Type 4**

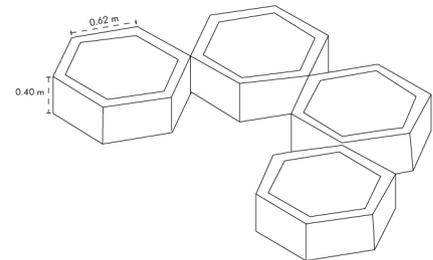


**Description**

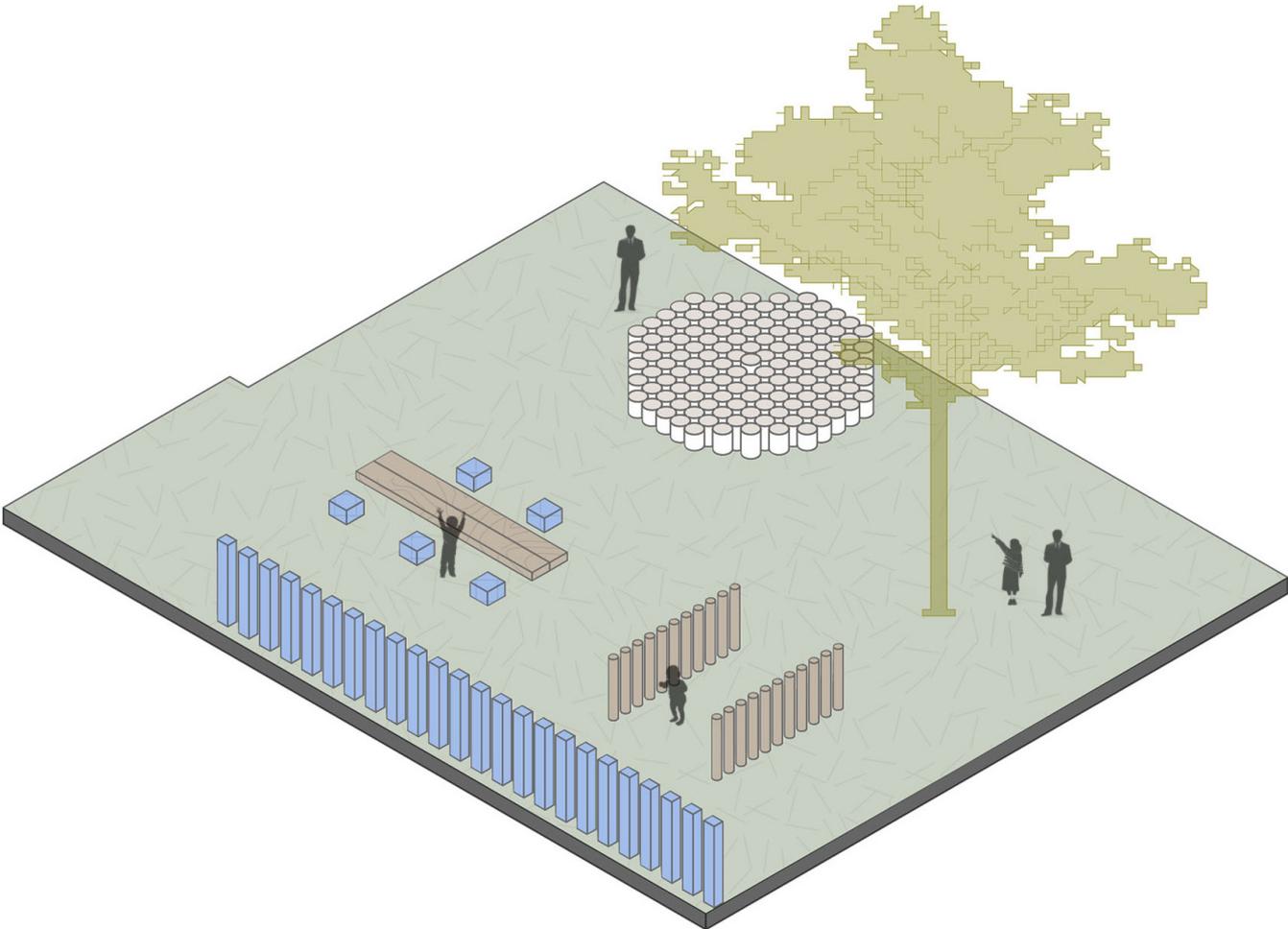
It is a tool that allows the stimulation of independence and activities of daily living through play.

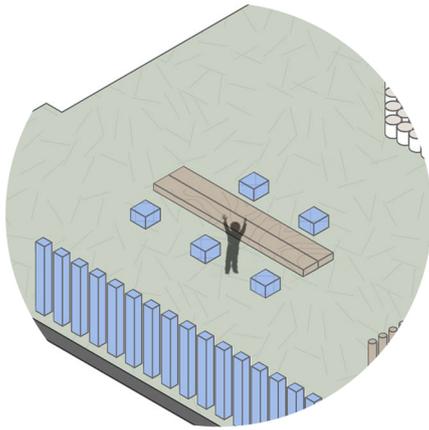


**Furniture Type 3**

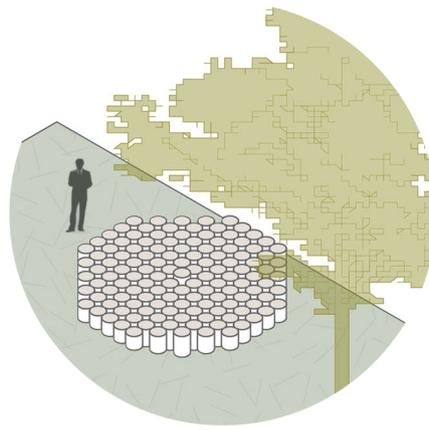


# MUSIC SPACE

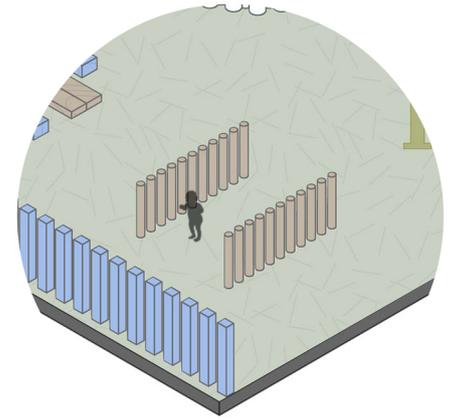




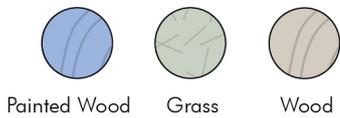
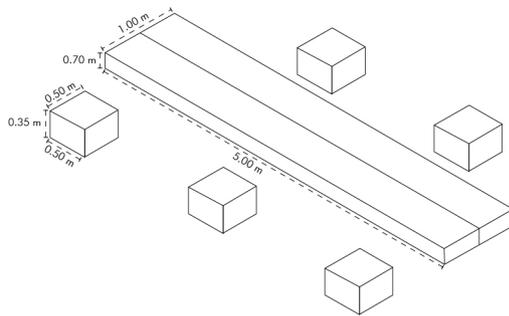
Furniture Type 1



Furniture Type 2

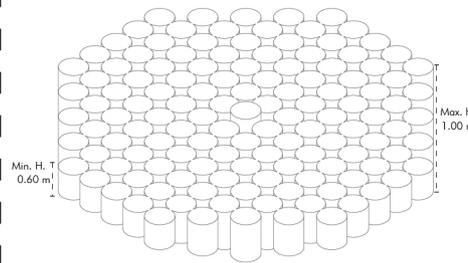


Furniture Type 3



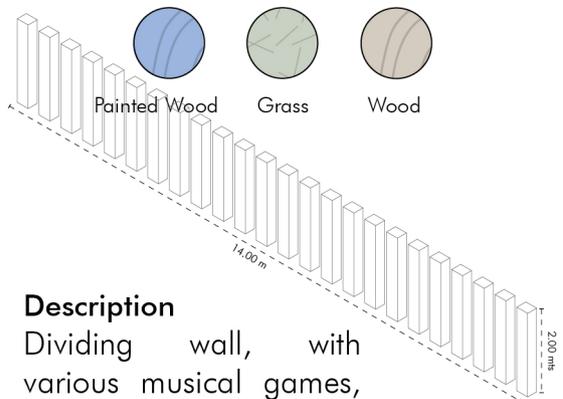
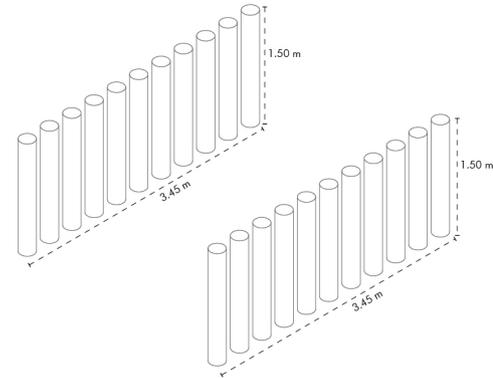
### Description

Tables with various musical games and instruments that allow play with stimulating and recreational sounds to develop team sharing.



### Description

Wooden furniture, which is hollow inside allowing sounds to be produced, having different heights and coverings to generate different and stimulating sounds for children's games.



### Description

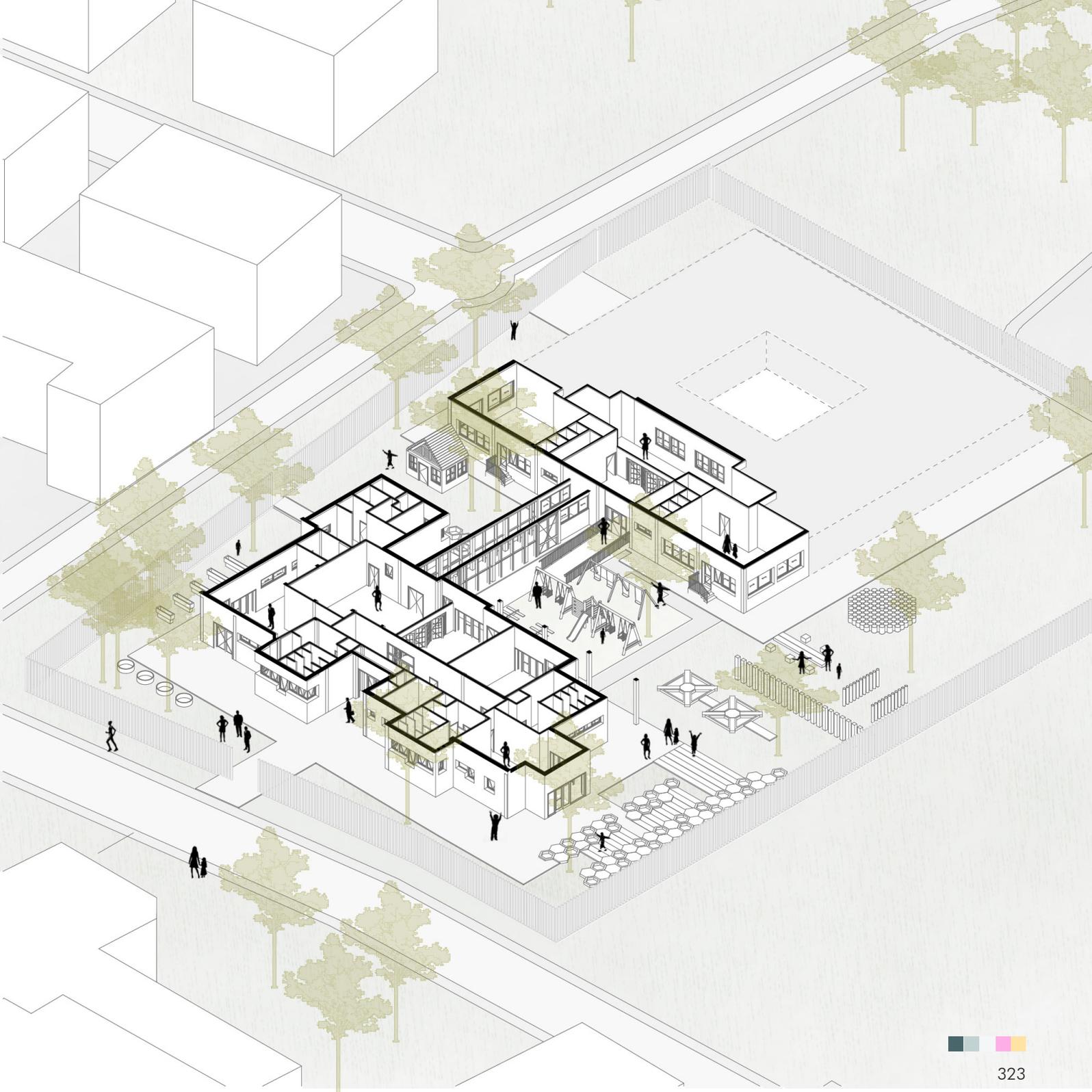
Dividing wall, with various musical games, instruments and wind accessories, different heights for all the ages in the school.

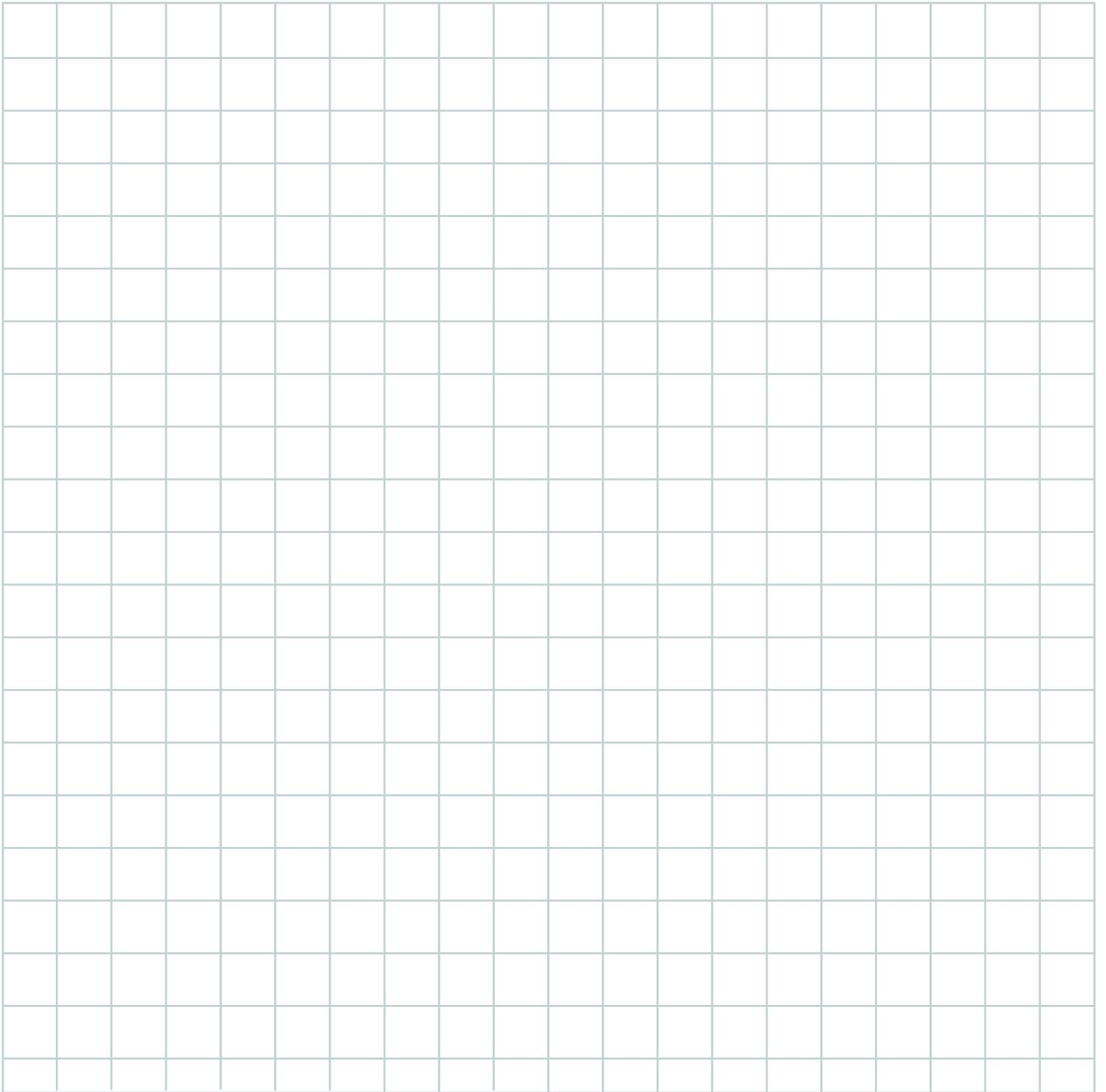


## FINAL PROJECT AXONOMETRY:

Last but not least, we find the axonometric view of our project proposal, in which you can see in volume how the proposal would be more of the external areas and the relationships they have with the facades of the classrooms which, as mentioned above, were intervened.

We can analyze how there are four activities in the outdoor patio and how these activities are related to a series of designed paths. With this, we can analyze how the project would respond to the place.





**CLASSROOM SCALE**  
**CONCEPT**



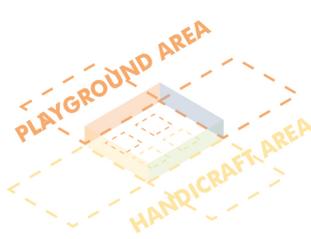
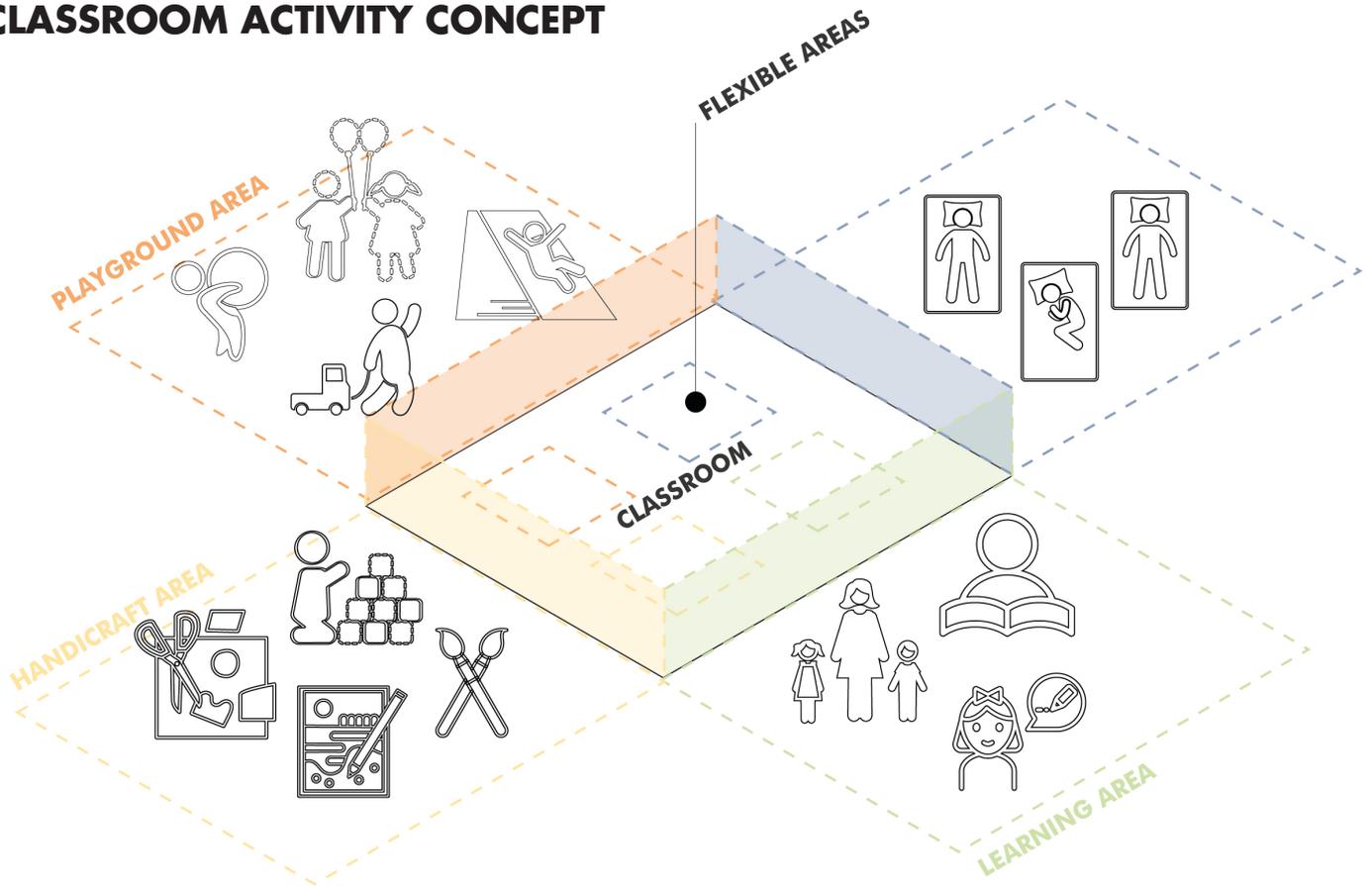
In this scale of the project we focus on the classroom, where we seek to include those activities that contribute to the development and integration of all children without exception. Where classified spaces are included to contribute to learning together with creativity, which among them we can find spaces for reading, concentration and learning, spaces for social interaction, spaces for creativity and also spaces of calm to allow the self-regulation of children in cases of over stimulation. All these spaces are organized mainly through the furniture, which is flexible so that the spaces can be relocated or reorganized in the future according to the convenience of the teachers in the process of educating the children. The colors are an important part of the organization of the spaces, because each type of activity is identified with a color reflected in the furniture or pictograms that indicate what is done in the space, so that the child can relate a color with the behavior that should have for the activity of each space. This organization allows that there is an order in the classroom in several aspects, in the distribution of the classroom (furniture) and in the activities for the students, avoiding the over stimulation for children with autism, which can generate lack of concentration for the child and for the whole classroom, generating an inconvenience to the teacher.



Image source: provided by the teacher of the school "Scuola dell' Infanzia Luzzati" Casale Monferrato.



# CLASSROOM ACTIVITY CONCEPT



**TWO AREAS**

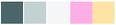
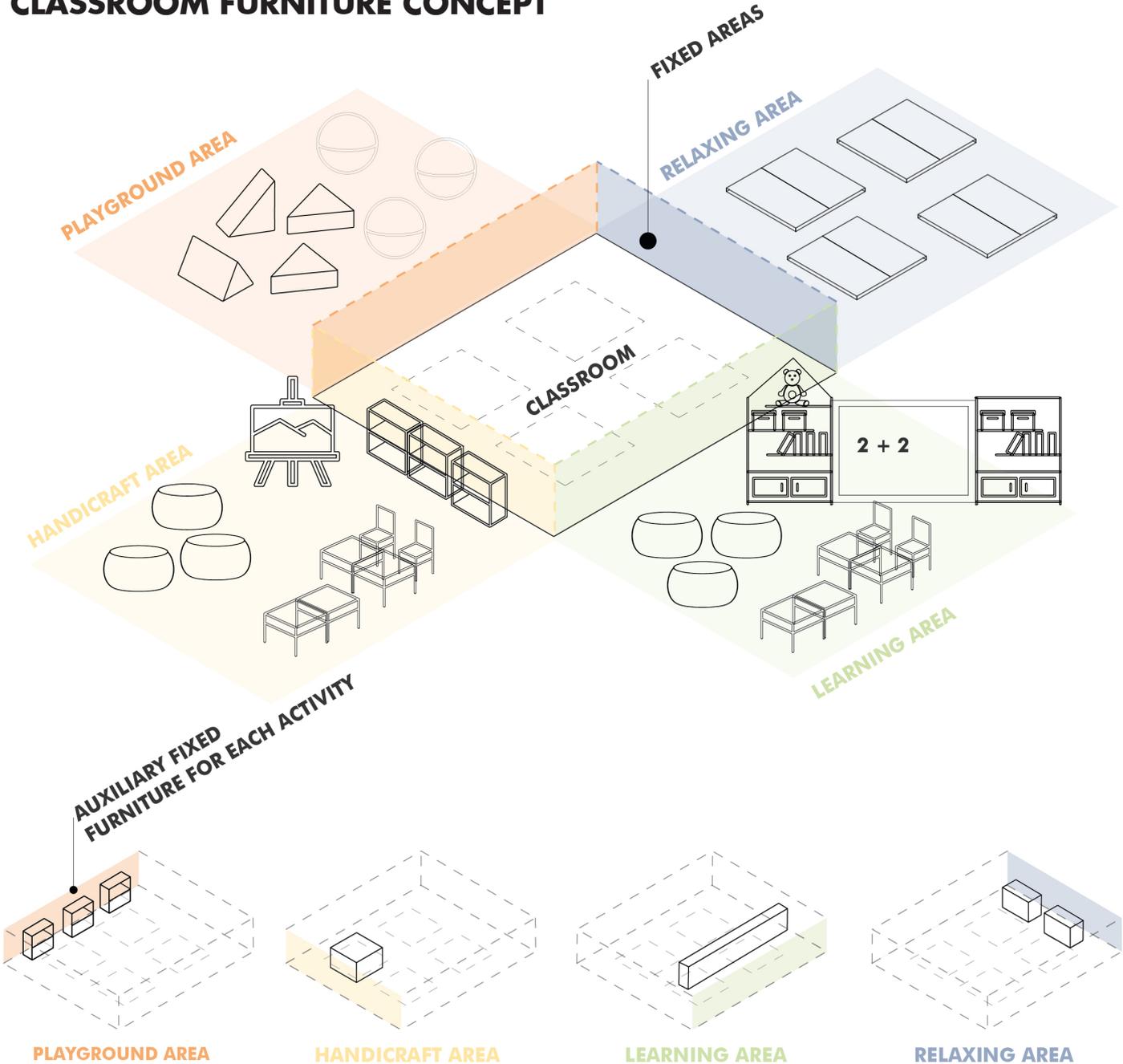


**THREE AREAS**



**ONE AREA**

# CLASSROOM FURNITURE CONCEPT



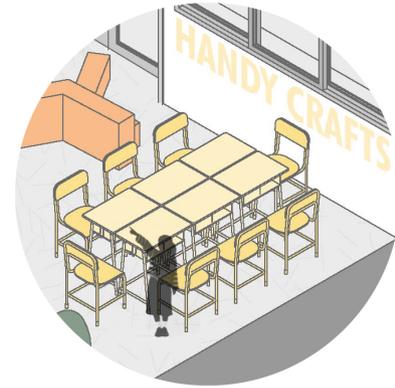
## INTERNAL SPACE DETAILS

It is essential that in the spaces where the children are, exist the visual guides that identify the areas to offer the child a structured and comfortable environment to function in an integrated manner in that place.

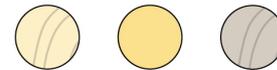
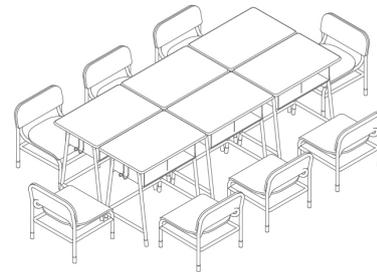
Label and organize not only the spaces but also the available materials.

This provides organization and structure for the child to function on their own.

Therefore, the spaces are structured through colors, pictograms, and furniture, adjustable according to the teacher in each classroom.



**Furniture Type 2**



Painted Wood   Painted Metal   Wood

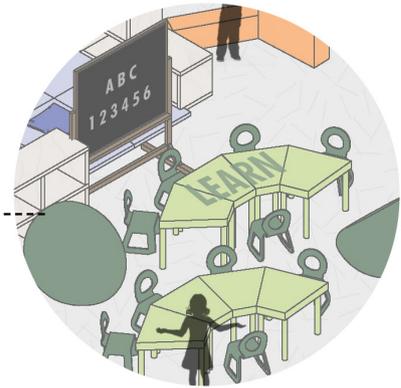
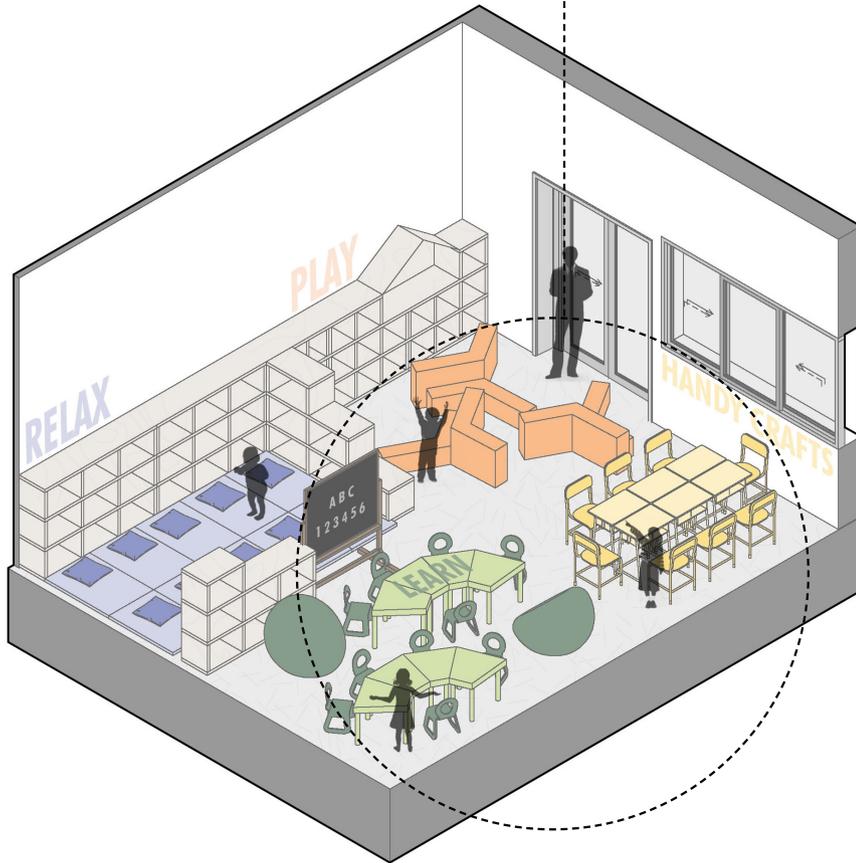
### **Description**

Space made up of comfortable and accessible furniture for children to make crafts.

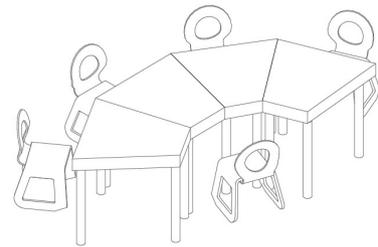
Furniture with rounded corners and leg protectors to prevent children from bumping into it.

# AXONOMETRY DISTRIBUTION DETAIL

TYPE A



Furniture Type 5



Painted Wood

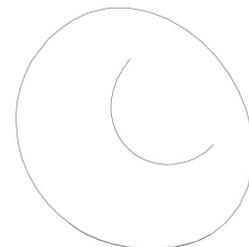


Fabric



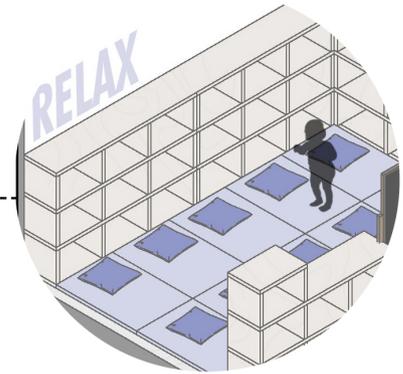
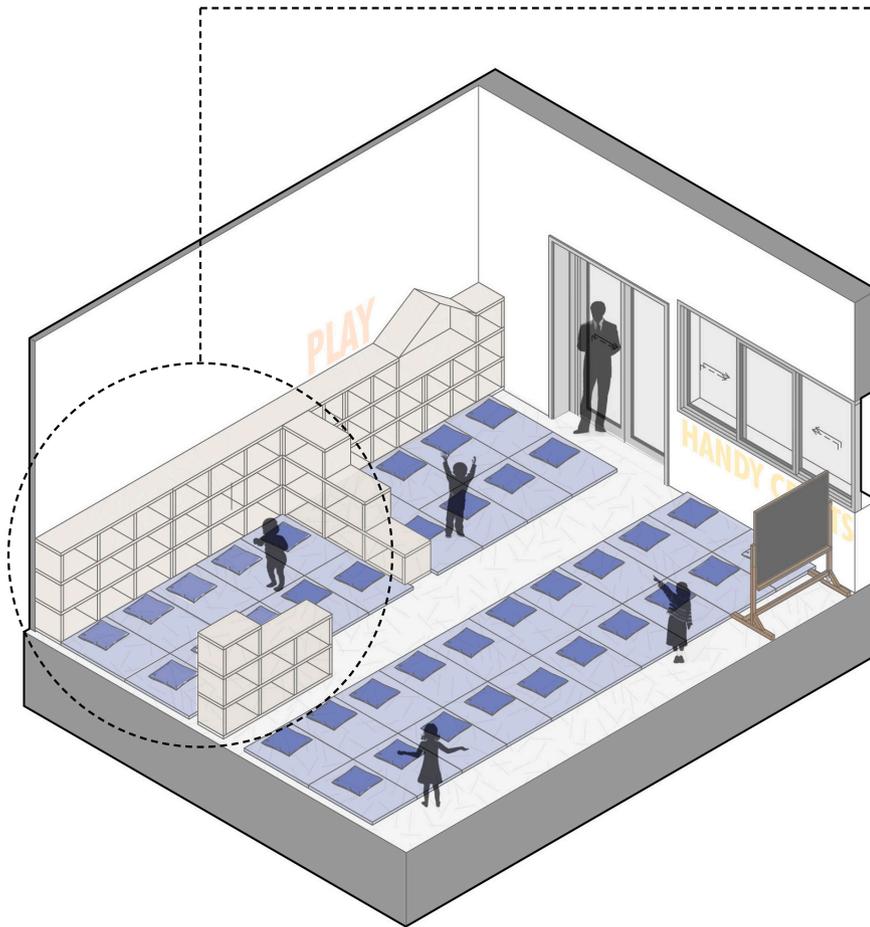
Painted Wood

Furniture Type 4

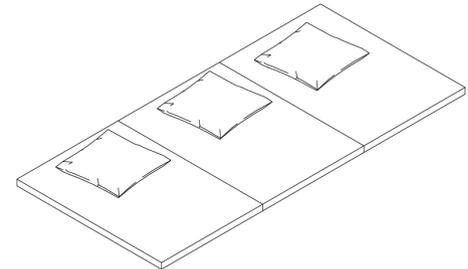


# AXONOMETRY DISTRIBUTION DETAIL

TYPE B



Furniture Type 1



Foam Rubber



Carpet



Wood



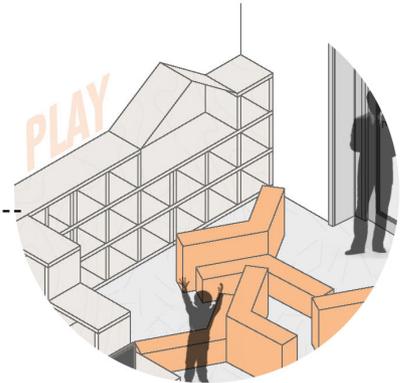
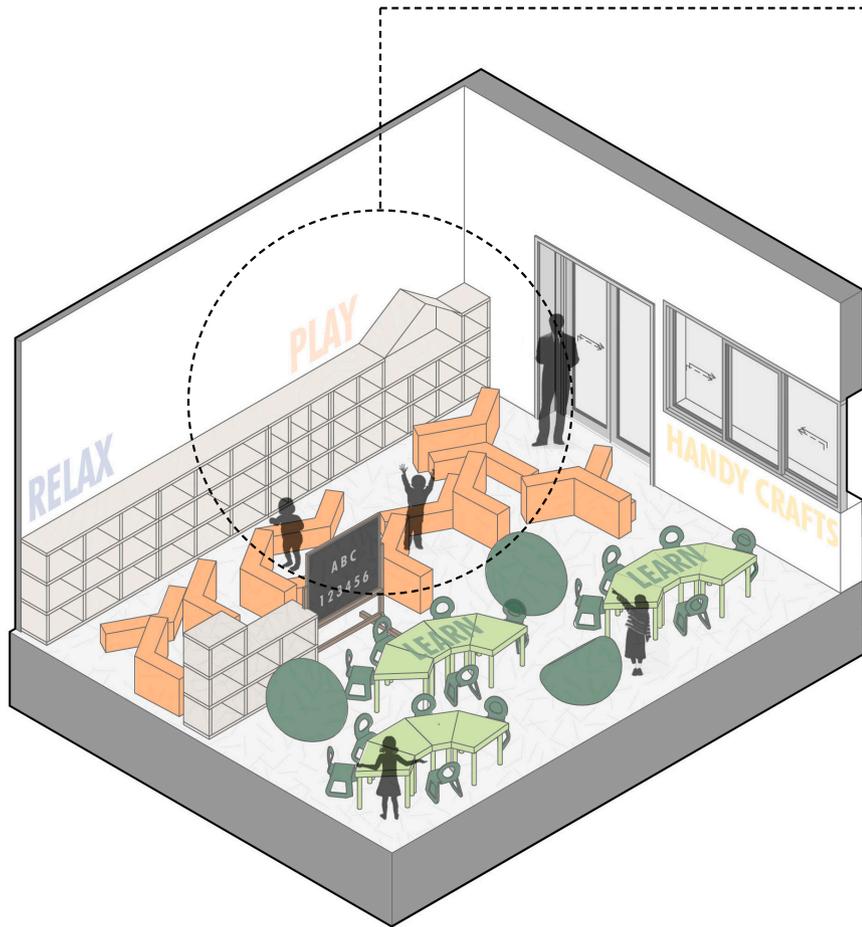
Fabric

## Description

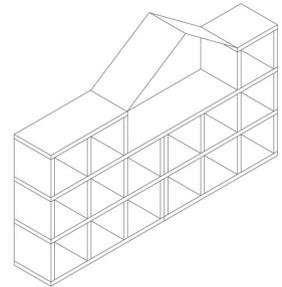
Confort space designed to be a place of respite and calm for students, and in particular students on the autism spectrum.

# AXONOMETRY DISTRIBUTION DETAIL

TYPE C



Furniture Type 3



Foam Rubber

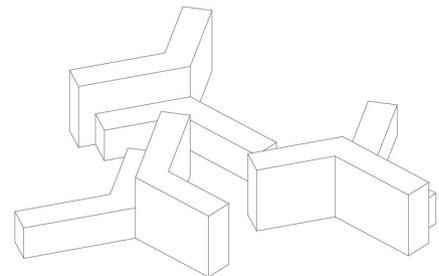


Carpet



Wood

Furniture Type 4



# DETAIL PLAN A

SCALE 1:50

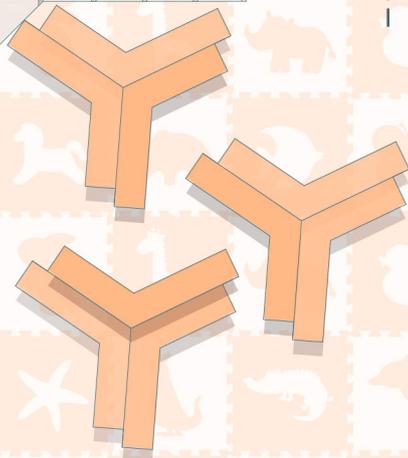


7,20 m

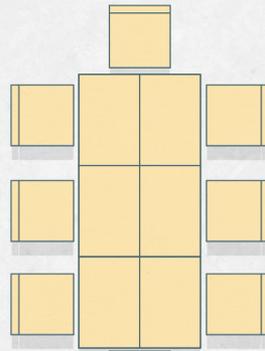
8,42 m

4,51 m

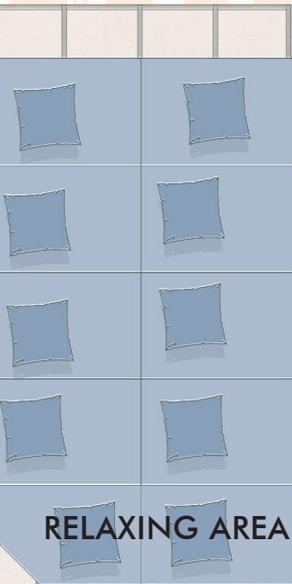
3,91 m



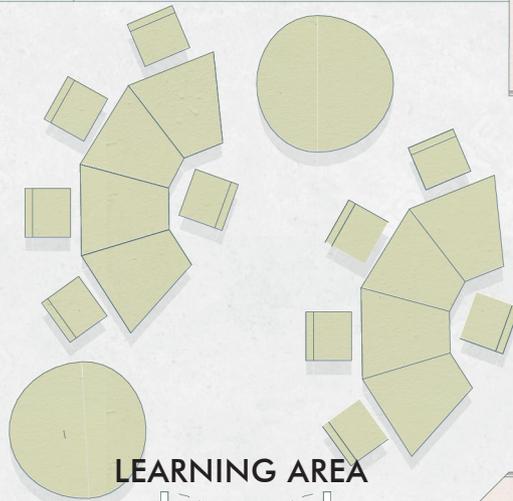
PLAYGROUND AREA



HANDICRAFT AREA



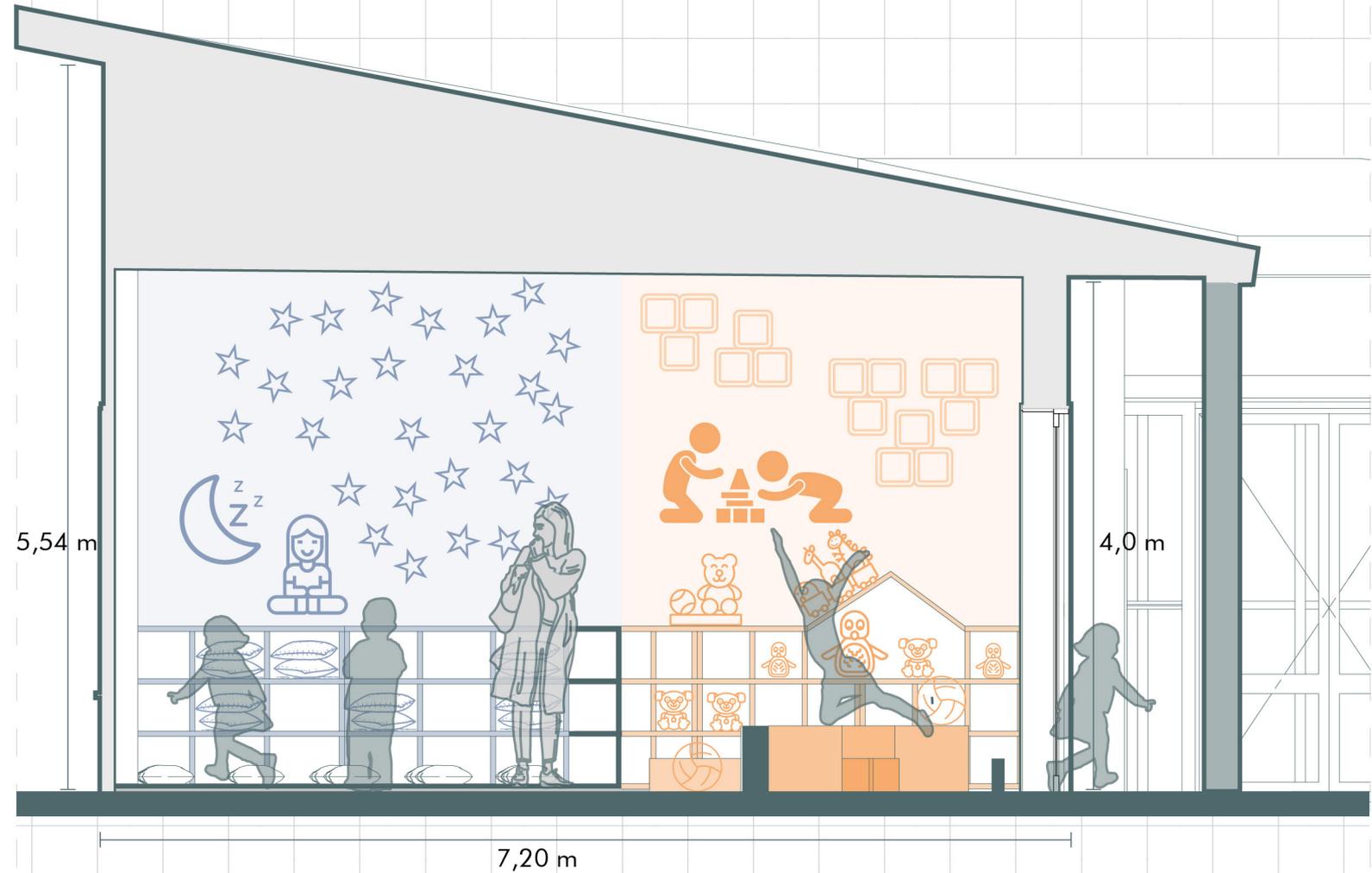
RELAXING AREA



LEARNING AREA

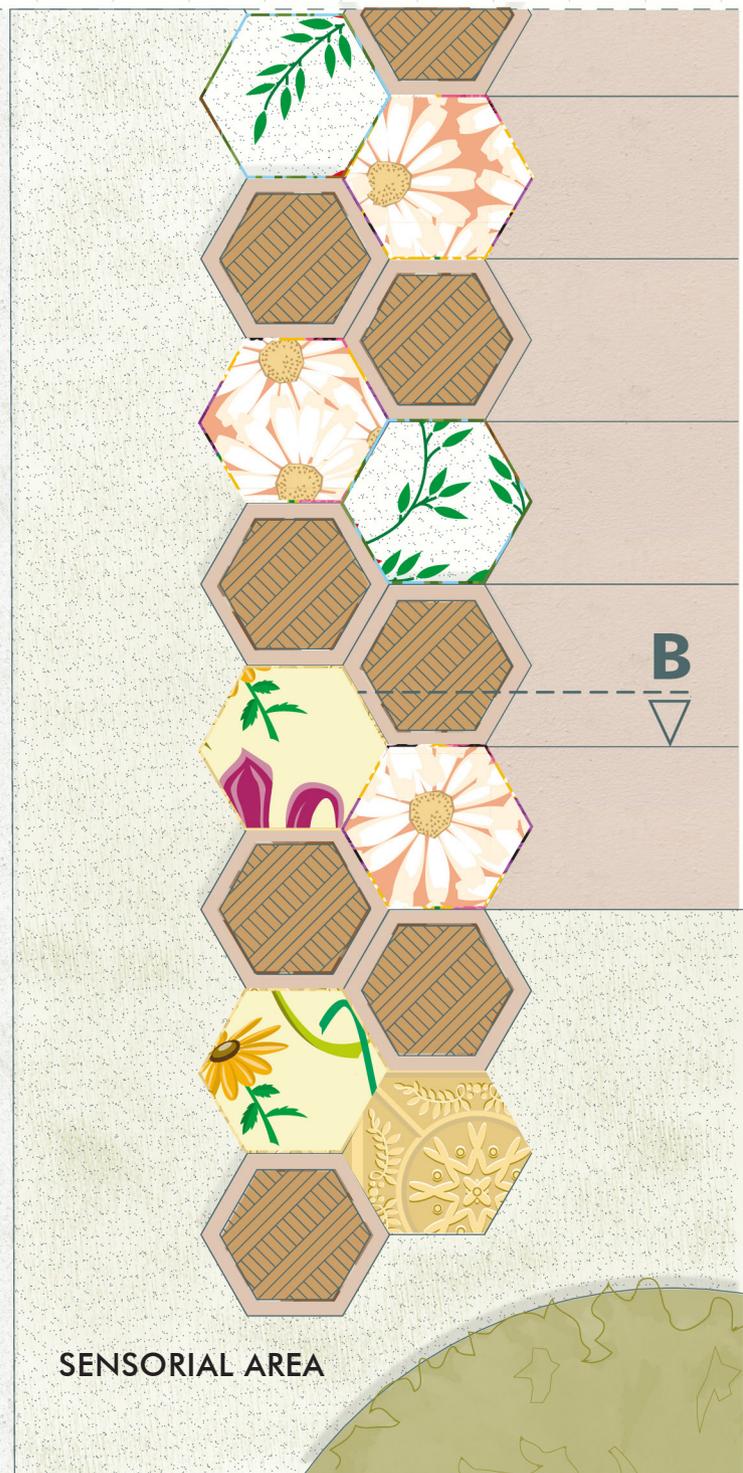
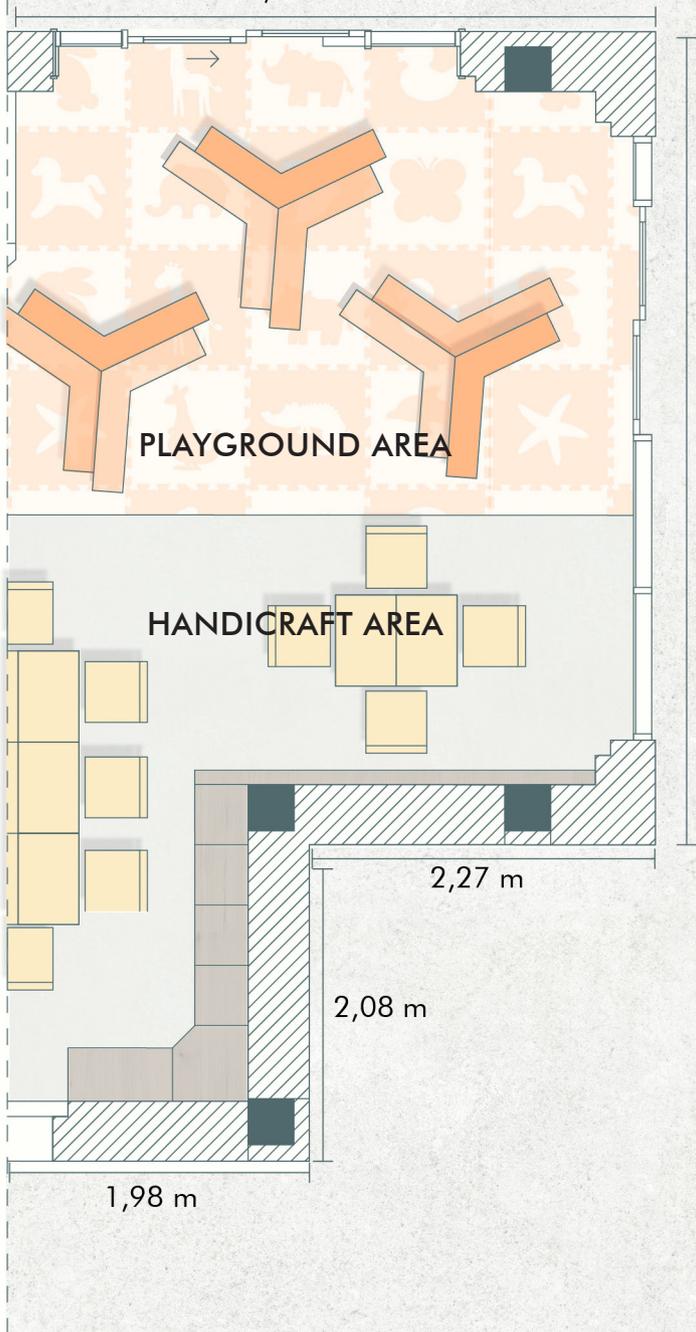
# DETAIL SECTION A

SCALE 1:50



# DETAIL PLAN B

SCALE 1:50 4,26 m



# DETAIL SECTION B

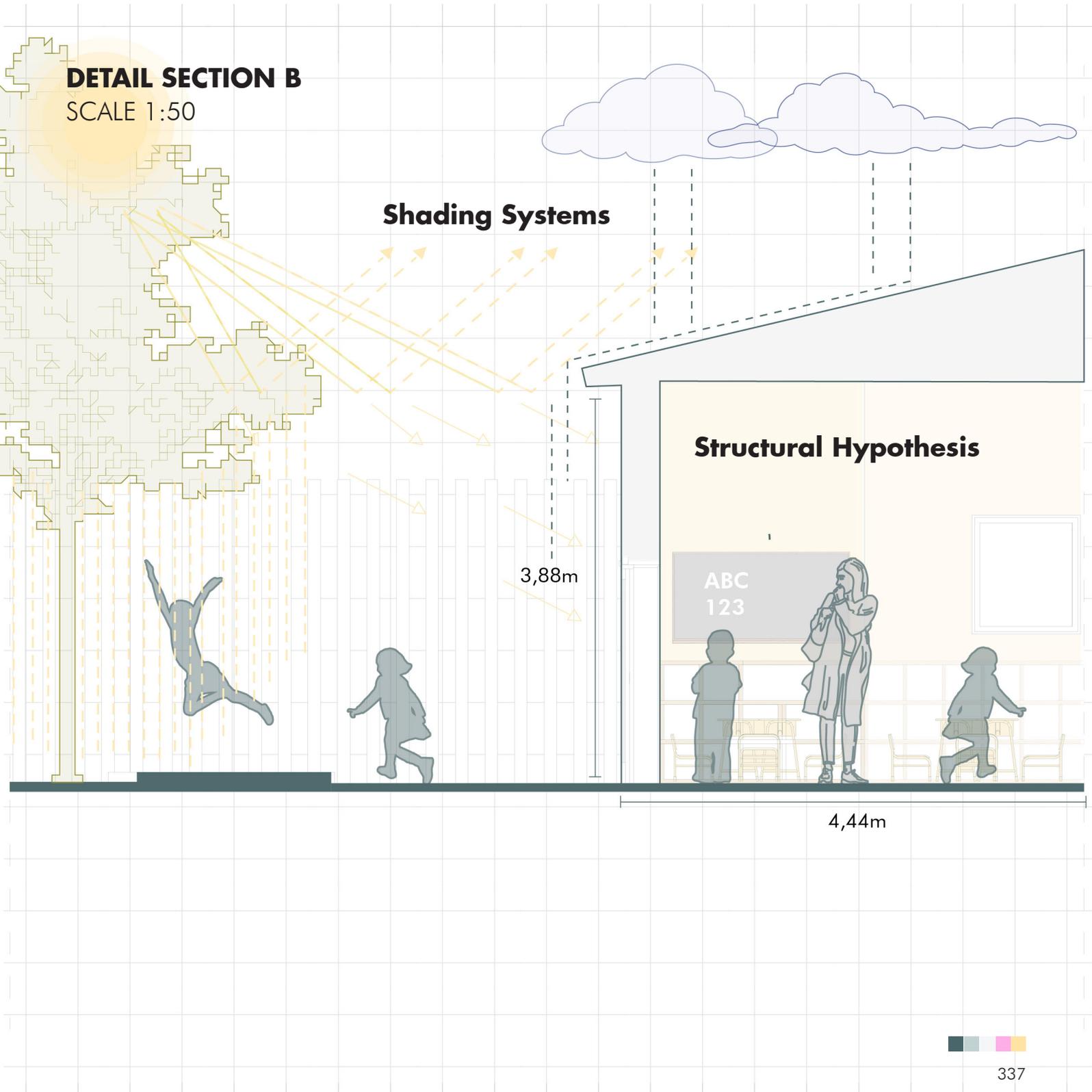
SCALE 1:50

## Shading Systems

## Structural Hypothesis

3,88m

4,44m



# DETAIL PLAN C

SCALE 1:50



RECREATIVE AREA



6,14 m

3,40 m

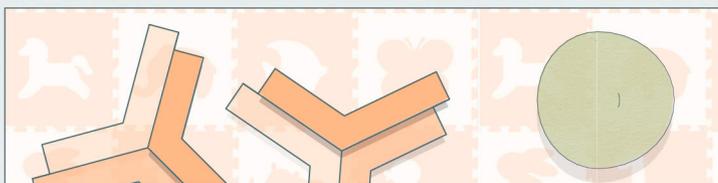
0,49 m

3,34 m

1,17 m

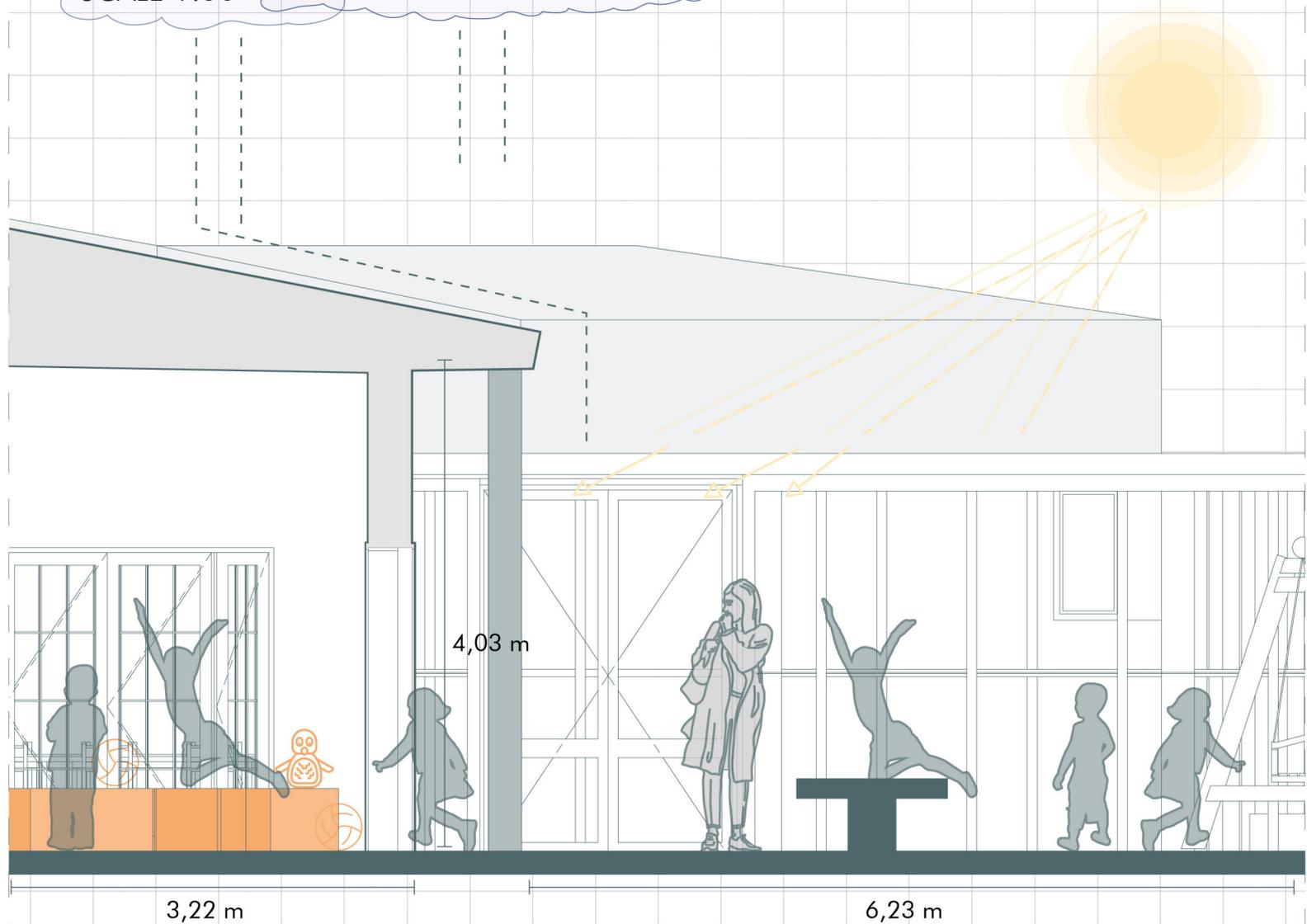
3,07 m

PLAYGROUND AREA



# DETAIL SECTION C

SCALE 1:50

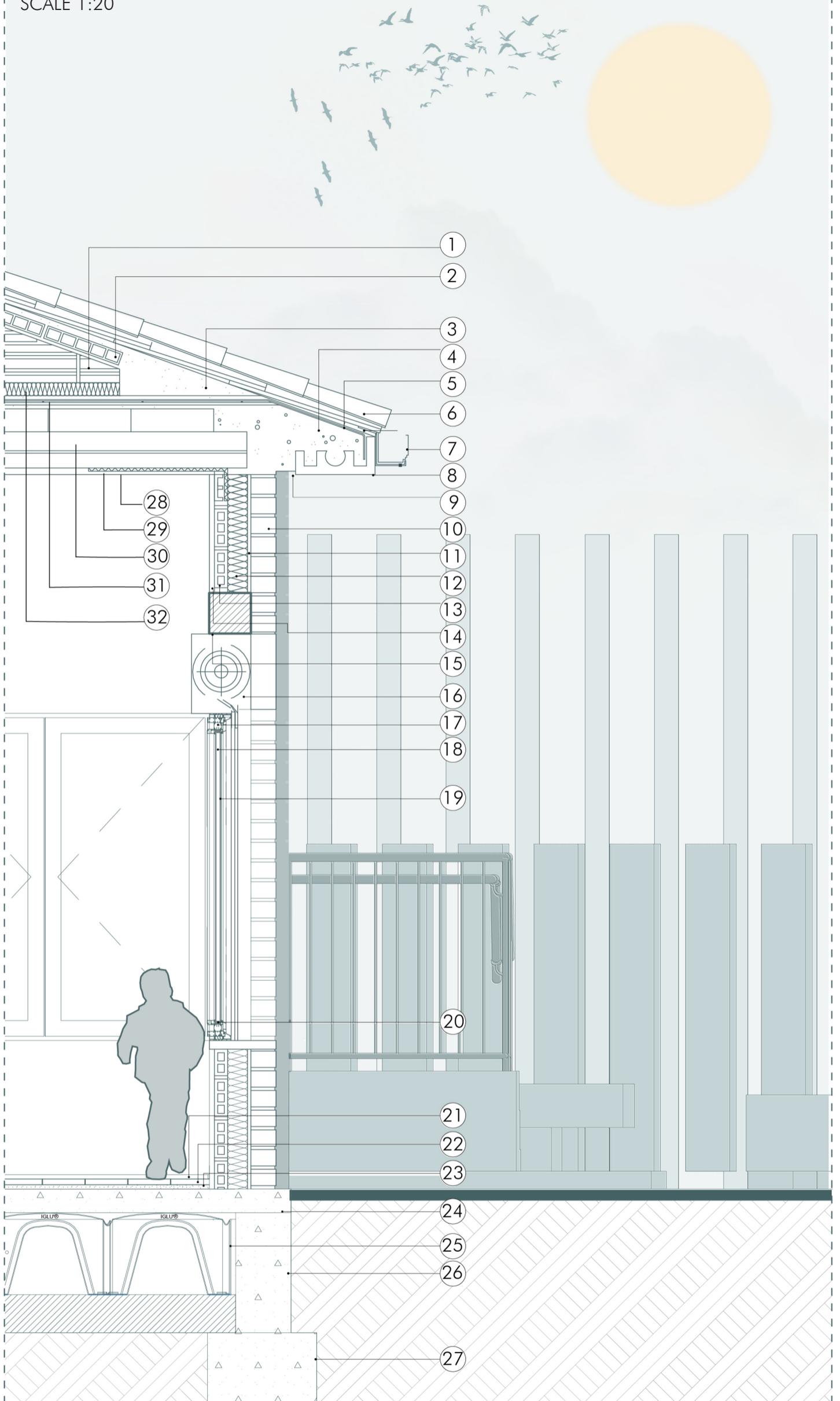




# SECTION

CONSTRUCTION DETAIL

SCALE 1:20



- |                            |                         |                           |                                 |
|----------------------------|-------------------------|---------------------------|---------------------------------|
| 1. Brick partition         | 10. Brick               | 20. Divider               | 30. Joist and vault floor slabs |
| 2. Double-cavity brick     | 11. Sulked of mortar    | 21. Baseboard             | 31. Reinforcement               |
| 3. Bonding mortar          | 12. Insulation          | 22. Flooring              | 32. Insulation                  |
| 4. Concrete                | 13. Single hollow brick | 23. Regulatory mortar     |                                 |
| 5. Steel mesh              | 14. Plaster             | 24. Concrete              |                                 |
| 6. Tiles                   | 15. Architrave          | 25. Formwor IGLU          |                                 |
| 7. Gutter / Gutter support | 16. Shutter             | 26. Compact concrete base |                                 |
| 8. L.C.V. palau brick      | 17. Metal profile       | 27. Foundation            |                                 |
| 9. Dropper                 | 18. Air chamber         | 28. Plaster               |                                 |
|                            | 19. Glass               | 29. Insulation strip      |                                 |



Image source: provided by the students Maria and Antonia, in the visit to Casale Monferrato. September 2021

# TYPE WINDOW- SINGLE

CONSTRUCTION DETAIL

SCALE 1:20

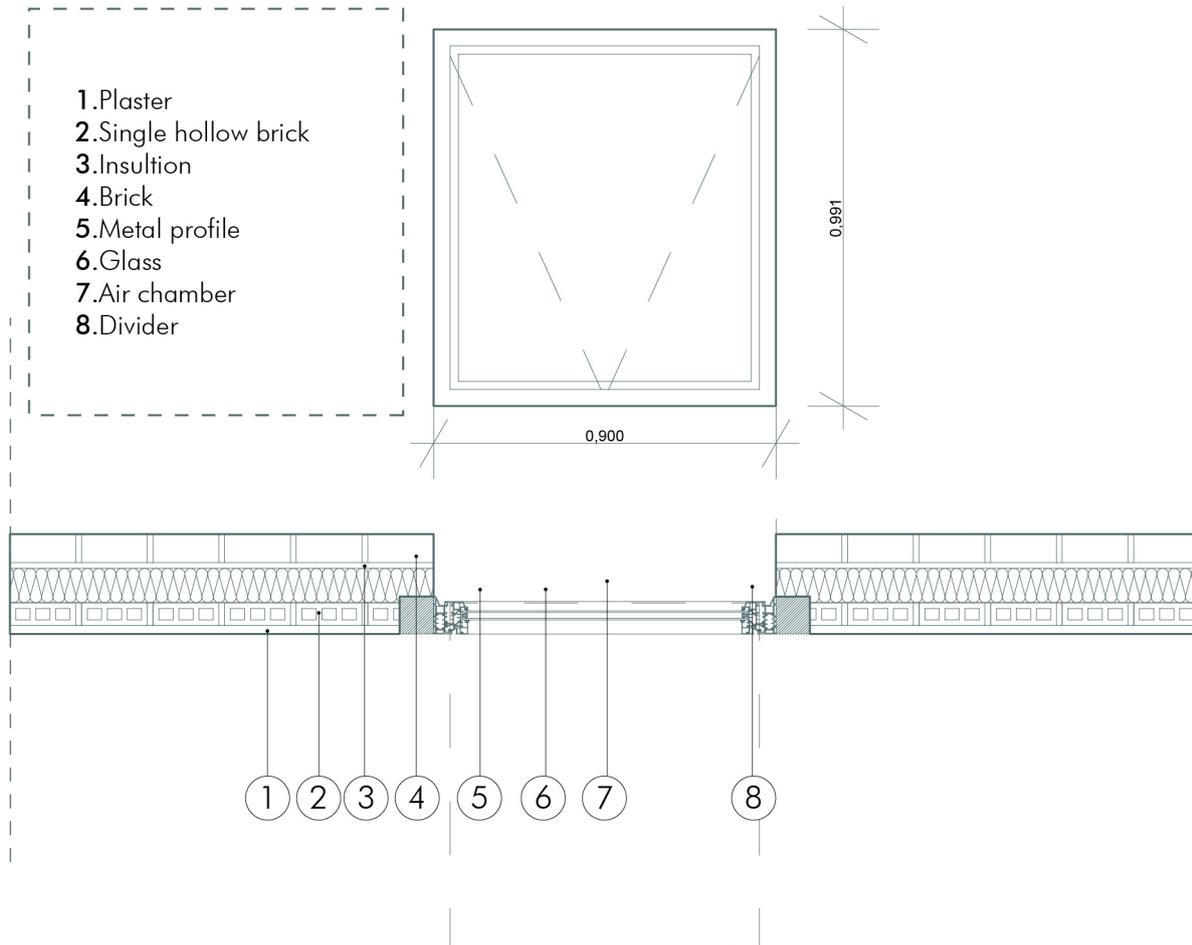


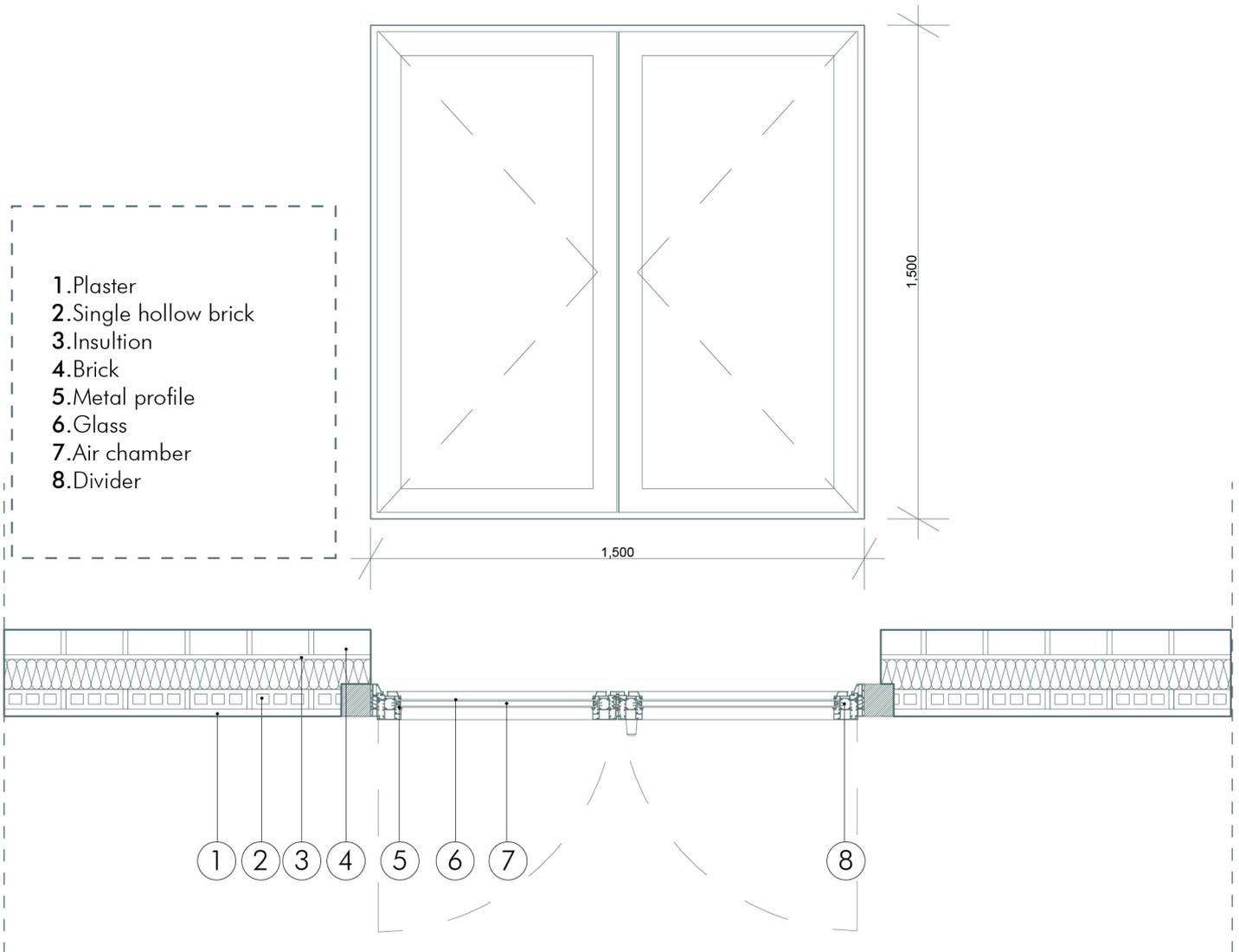


Image source: provided by the students Maria and Antonia, in the visit to Casale Monferrato. September 2021

# TYPE WINDOW- DOUBLE

CONSTRUCTION DETAIL

SCALE 1:20

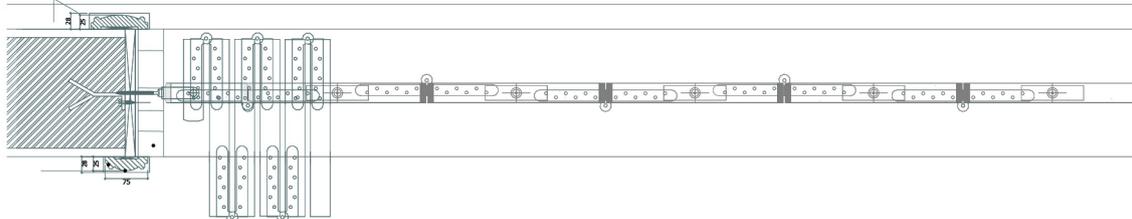
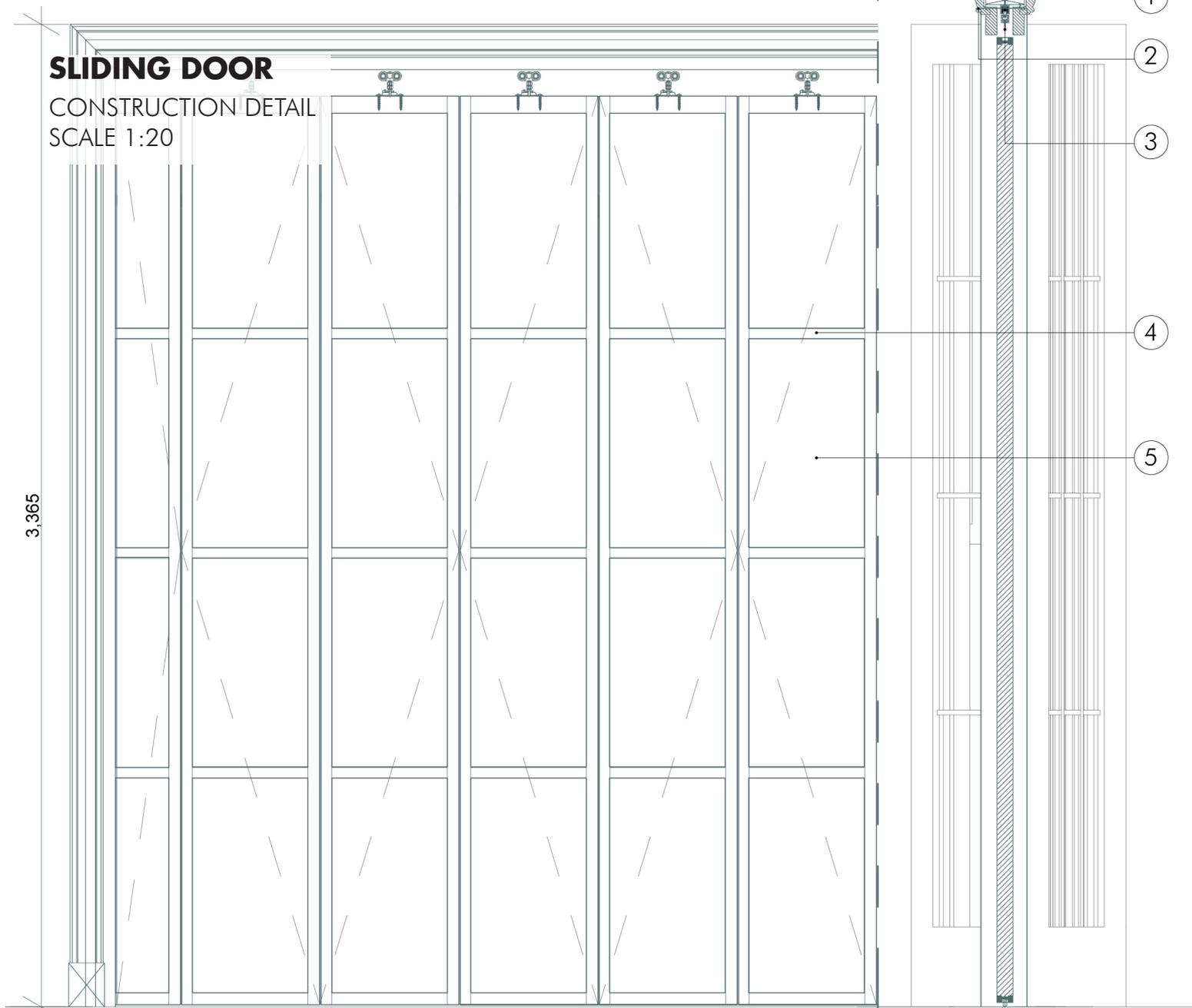




# SLIDING DOOR

CONSTRUCTION DETAIL  
SCALE 1:20

3,365



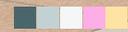
- 1. Wood adjustable external
- 2. Wood adjustable internal
- 3. Sliding channel
- 4. African wood frame door
- 5. Glass





# EXTERNAL VIEW

SENSORIAL AREA





# EXTERNAL VIEW

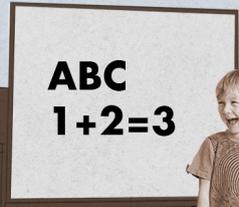
RECREATIVE AREA





# INTERNAL VIEW

CLASSROOM



PLAY

SLEEP

ABC  
1+2=3

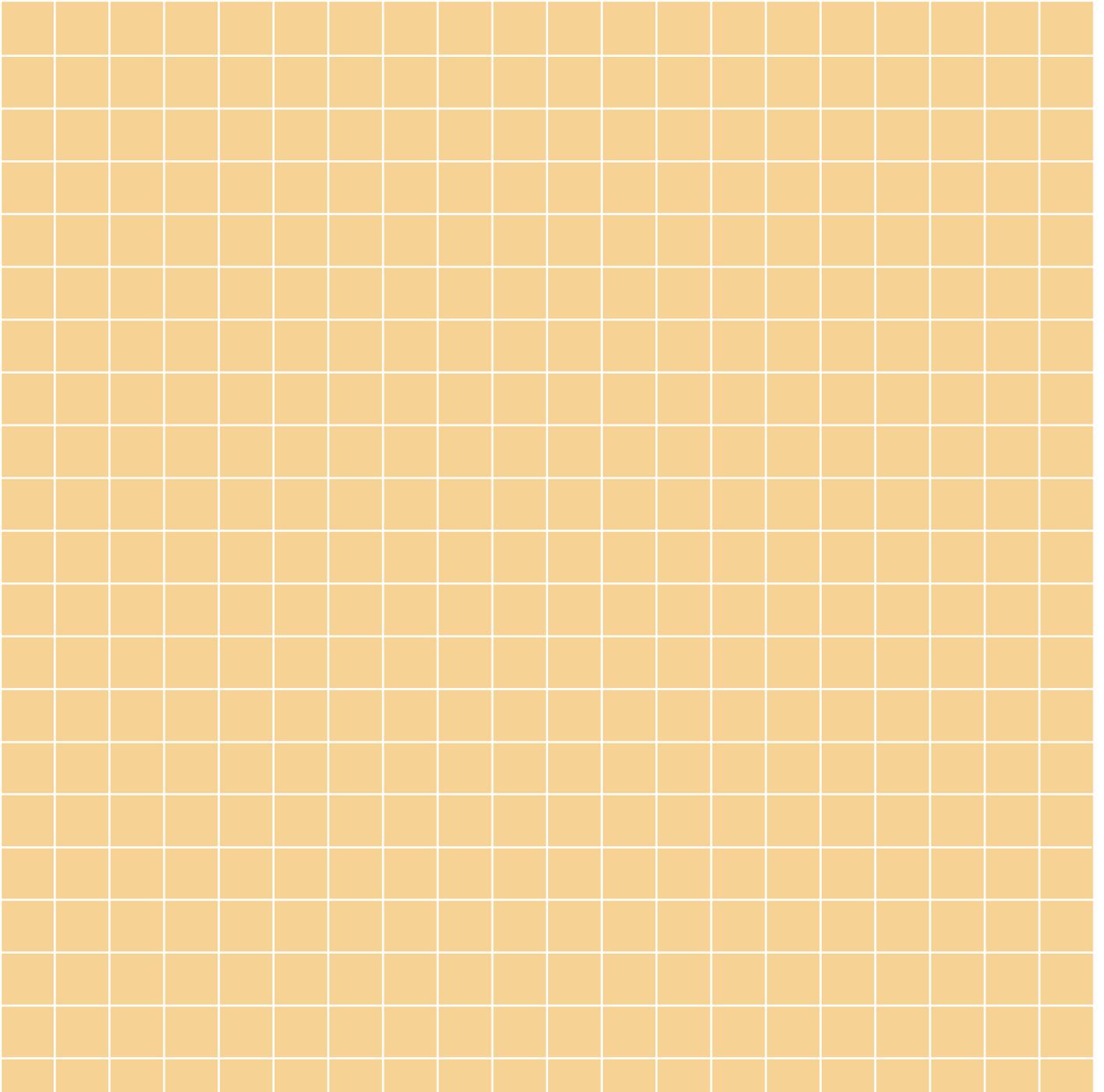
HANDCRAFT





**INTERNAL VIEW**  
LEARNING AREA

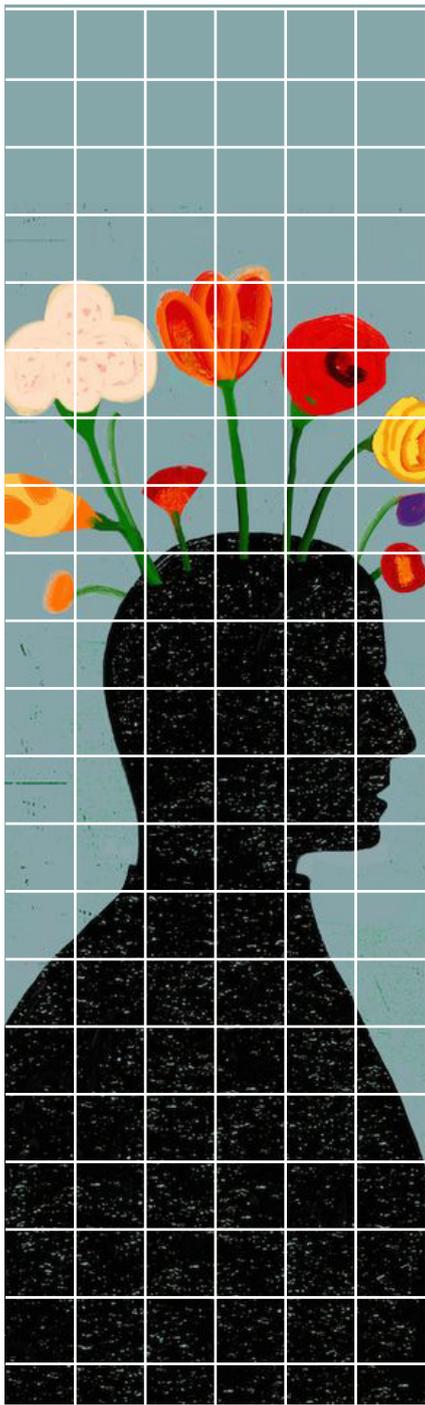




# CONCLUSIONS

# 06





**“Autism spectrum disorder is unique to each person; two children are not the same.”**

School Teacher Paola Lupano

**“Considering a fundamental issue such as Autism Spectrum Disorder and its inclusion in society, in all spaces where any person develops, it is essential that from an early age, the child participates in learning spaces where not only will learn academic elements but also learn to live with other children, to socialize, to play and share. For this, it is essential to provide a well-designed space where organization prevails, is structured according to their needs, and offers the stimuli required for their stimulation with the curricular adaptations that each child needs, which can be used for both regular and special children.”**

Child Psychologist Maria Antonieta De Oliveira

**“We seek to generate a positive impact on children with autism and their families through education, generating changes and improving the quality of life of the child.”**

Vice-president and Director, Foundation “Autismo en Voz Alta”

María Isabel Pereira

## PROPOSAL CONCLUSIONS SWOT

| PROPOSAL CONCLUSIONS (SWOT)   |   |
|---|---|
| <b>INTERNAL AREAS (CONNECTOR SPACE)</b>   |   |
| STRENGTHS   | WEAKNESSES  |
| Maintain easy access for all types of users.  | There are no weaknesses to be improved.   |
| <b>MULTIPLE ROOM</b>  |   |
| STRENGTHS   | WEAKNESSES  |
| Space potentially used for various functions.   | Possible overload of odors, if there is no adequate cleaning.                                 |
| <b>LUNCH ROOM</b>   |   |
| STRENGTHS   | WEAKNESSES  |
| A new organization allows reducing the number of children at lunchtime if there is a case of irritability in a child. | A lot of children at lunchtime, but with the division of the space it is solvable.            |
| <b>CLASSROOM( PLAYGROUND, HANDCRAFT,LEARNING,RELAXING)</b>  |   |
| STRENGTHS   | WEAKNESSES  |
| Structure that allows to have an order at the moment of carrying out the activities.                                  | There are no weaknesses to be improved.   |
| <b>EXTERNAL SPACES (SWOT)</b>   |   |
| <b>EXTERNAL AREAS(MUSIC, RECREATIVE,SENSORIAL, DO IT YOURSELF)</b>  |   |
| STRENGTHS   | WEAKNESSES  |
| Diverse areas that allow the child to learn through play and sensory elements.  | The schedules of use must be controlled by the teachers, so that they are used appropriately. |

| <b>PROPOSAL CONCLUSIONS (SWOT)</b>   |   |
|--|---|
| <b>INTERNAL AREAS (CONNECTOR SPACE)</b>  |   |
| <b>OPPORTUNITIES</b>   | <b>THREATS</b>  |
| Wide corridors and well signposted with respect to the activities.                                   | There must be control of schedules so that not all children walk the corridors at the same time.      |
| <b>MULTIPLE ROOM</b>   |   |
| <b>OPPORTUNITIES</b>   | <b>THREATS</b>  |
| Perform outdoor activities when the weather does not allow them to be performed outside.             | Possible lack of order, if it is not properly organized according to its use.                         |
| <b>LUNCH ROOM</b>  |   |
| <b>OPPORTUNITIES</b>   | <b>THREATS</b>  |
| Division of the space to have more order at meal time.   | There must be ventilation control, because odors can cause stress in children with autism.            |
| <b>CLASSROOM( PLAYGROUND, HANDCRAFT,LEARNING,RELAXING)</b>   |   |
| <b>OPPORTUNITIES</b>   | <b>THREATS</b>  |
| The furniture is adaptable and allows to expand or reorganize the spaces according to each activity. | If there is no order with respect to the activities, it can be a distraction factor for the students. |
| <b>EXTERNAL SPACES (SWOT)</b>  |   |
| <b>EXTERNAL AREAS(MUSIC, RECREATIVE,SENSORIAL, DO IT YOURSELF)</b>                                   |   |
| <b>OPPORTUNITIES</b>   | <b>THREATS</b>  |
| They provide a variety of ways to reinforce learning.  | Lack of organization and cleanliness in the areas can be a factor in the children's use of them.      |

Through the design, we can conclude that the weaknesses and threats present in the school will decrease, in terms of those referring to the facilities and tools provided to the school and teachers. Therefore, the weaknesses and threats mentioned in the table refer to the organization and use of the tools that teachers have.

The evidence presented above shows that after conducting research on children within the autism spectrum, starting from their behaviors, problems, skills, strengths, and many other factors, managed to generate different strategies which can be put into practice in educational and recreational spaces, making it clear how the architecture is one of the critical factors to achieve a healthy development not only in children within the autism spectrum but in any person.

These analyses are made through different interviews with professionals of Venezuela and Italy specialized in this subject, that shows us how is the response of each country in front of this situation, with this we can notice how Venezuela generates different specialized schools for children with varying needs with the purpose of making a positive inclusion in children that present more difficulties of learning and socialization, as well as traditional schools for all type of children, instead of that Italy the schools must be qualified for any child without importing its physical consideration, nor psychological.

Because of this, we can arrive at the question if it is necessary to have a specialized school or not because, in some way, this can generate a type of exclusion in children since a child within the autistic spectrum can be diagnosed at an advanced age, also because growing up in a common school environment, with all

kinds of people will help the user to develop a better response in everyday life because having children separated by their physical and psychological condition makes them live in a bubble.

When they go out to the real world, they will reach a state of anxiety because they will not know how to behave in a familiar environment, where they can find different types of individuals. Schools should have the tools to include anyone regardless of their conditions, where they will teach them to live in a daily environment. Finally, a study of guidelines is generated, which allowed us to realize how the spatiality at the time of formation of a human being is a significant factor for their growth, as this will enable the child's development in a comfortable and healthy environment. The use of colors, patterns, pictograms, furniture, thermal comfort, flexibility, and spatial organization were fundamental values to reach a project that responded to adequate spaces, where children could get to have good learning, regardless of their conditions.

In conclusion, the project reaches the realization of inclusive spaces, starting with the classrooms, which are the spaces that children spend most of the day, which will help children and their teachers to have areas for learning, play, manual activities, and rest, which will allow the child to learn based on their abilities and their pace where teachers will have all the tools at hand.

The school's common areas are additionally designed since these

will help supply the needs of food, fun, and recreation of the children. With this is also achieved to have indoor spaces designed for entertainment at times when the weather does not allow to go outside, likewise the design of the courtyard where the child will be taken to learn recreationally and so that teachers can have the tools to generate different types of skills in each of them.

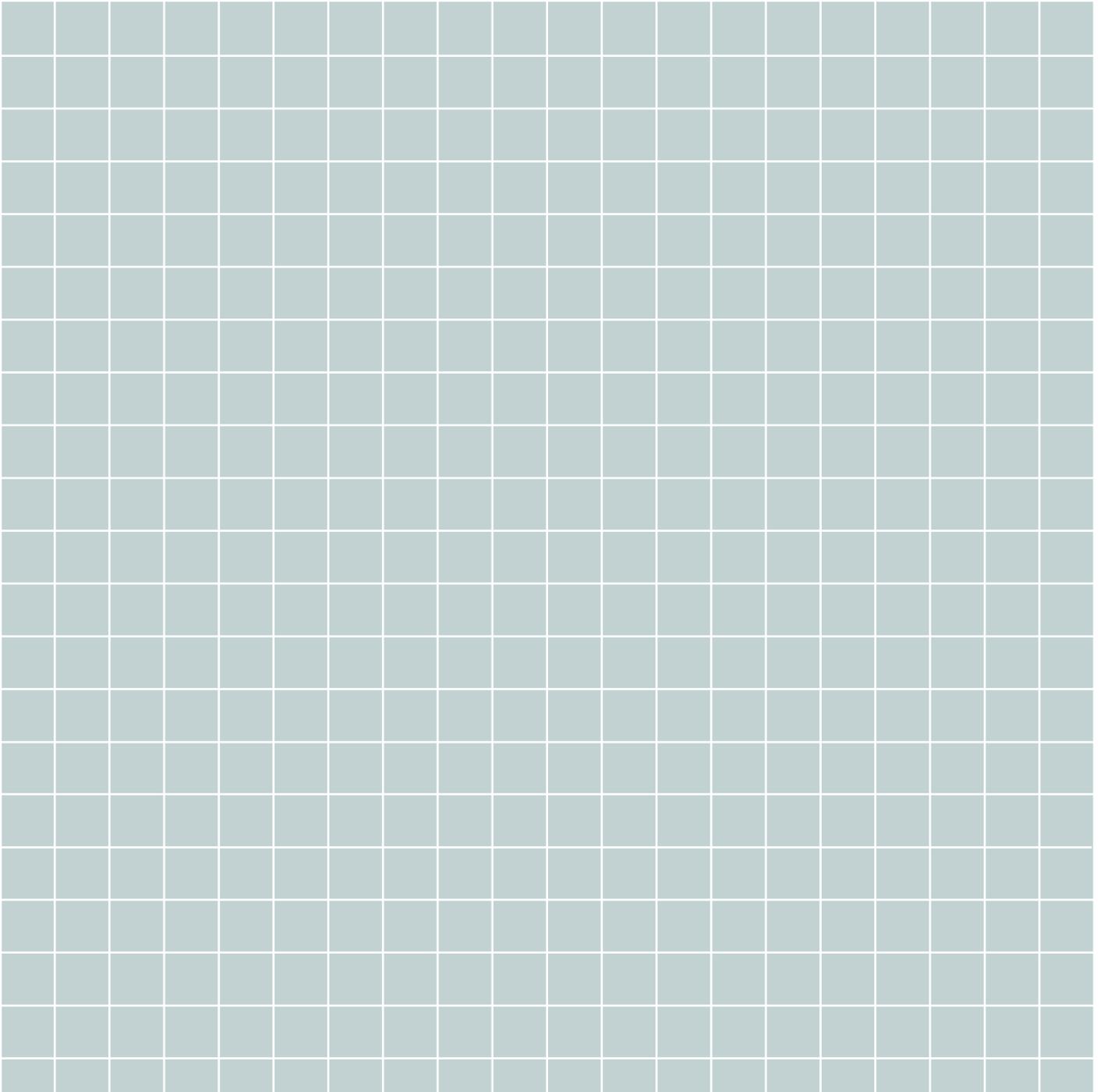
The need to have spaces that respond with the necessary tools for the learning of all types of children will help to form people for the future, which will be part of an inclusive society because, within inclusive education, it must be understood that people within the autism spectrum are all specific cases and have different levels of behaviors even though there are some with very common characteristics and behaviors. However, everyone still needs to have the same rights and respect that human beings have.

The proposal was then presented to Professor Paola Lupano, who is in charge of some autism spectrum children in the case study school of Casale Monferrato, Italy.

Where we obtained a positive response, confirming to be correct the parameters and design strategies established, but emphasizing the diversity that exists among children within the autistic spectrum, so they would be general strategies that would improve the development of students achieving a positive integer, but there is the possibility that some students have some diverse behavior and

influence their activities.

For this reason, we as future architects seek to encourage through our thesis the integration and inclusion in architectural spaces, in this case of children within the autistic spectrum in educational areas, because the architectural spaces reflect us as a society, thus responding to the search for acceptance that we are all different and that we should all be taken into account within the difference we can be, from the physical to the mental, without any discrimination.



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**-Fig51:** 240 Preschool playground ideas: preschool playground, outdoor kids, playground. (2021). Pinterest. Retrieved November 2021, from <https://www.pinterest.com/schroed/preschool-playground/>.

**-Fig52:** Natural Playgrounds Store: School playground, Physical activities for

kids, Playground painting. (n.d.). pinterest. Retrieved November 2021, from <https://www.pinterest.com/pin/796785359074535248/>.

**-Fig53:**Pin van Kimberly Perry op 0916-De Tobbe: Speelplaatsideeën, Speelplaatsen, Schooltuinen. (n.d.). pinterest. Retrieved November 2021, from <https://www.pinterest.com/pin/33777065935941740/>.

**-Fig54:**Pizarrones: Outdoor kids play area, Diy playground, Kids outdoor play. (n.d.). Pinterest. Retrieved November 2021, from <https://www.pinterest.com.au/pin/459226493250856296/>.

**-Fig55:**Pinta tu patio para jugar y divertirse, 50 nuevos y divertidos Juegos tradicionales para el patio del cole.: Juegos tradicionales, Parque infantil de preescolar, Juegos de recreo. (n.d.). pinterest. Retrieved November 2021, from <https://www.pinterest.es/pin/825143962953455367/>.

**-Fig56:**A large outdoor installation of stringy rubber tubes that kids can tie into knots, or grab in bunches to cl...: Kids room design, Playground design, Installation art. (n.d.). pinterest. Retrieved November 2021, from <https://www.pinterest.it/pin/439875088604858236/>.

**-Fig57:**Sensory Playgrounds. (n.d.). Multi-Sensory Playgrounds: Early Childhood Development Hubs. Retrieved November 2021, from <https://www.playgroundequipment.com/multi-sensory-playgrounds/>.

**-Fig58:**These creative sensory walk activities for kids are great for exploring the senses. (2019). hello, Wonderful. Retrieved November 2021, from <https://www.hellowonderful.co/post/12-creative-sensory-walk-activities-for-kids/>.

**-Fig59:**Blotevoetenpad: Sensory garden, Parks and recreation jobs, Natural

playground. (n.d.). Pinterest. Retrieved November 2021, from <https://www.pinterest.es/pin/442337994636008874/>.

**-Fig60:**What Does Your Playground Look Like? (2018). SHP. Retrieved November 2021, from <https://shp.com/2018/04/04/what-does-your-playground-look-like/>.

**-Fig61:**Diy sandbox, Natural play spaces, Natural playground. (n.d.). Pinterest. Retrieved November 2021, from <https://www.pinterest.co.kr/pin/321866704616275298/>.

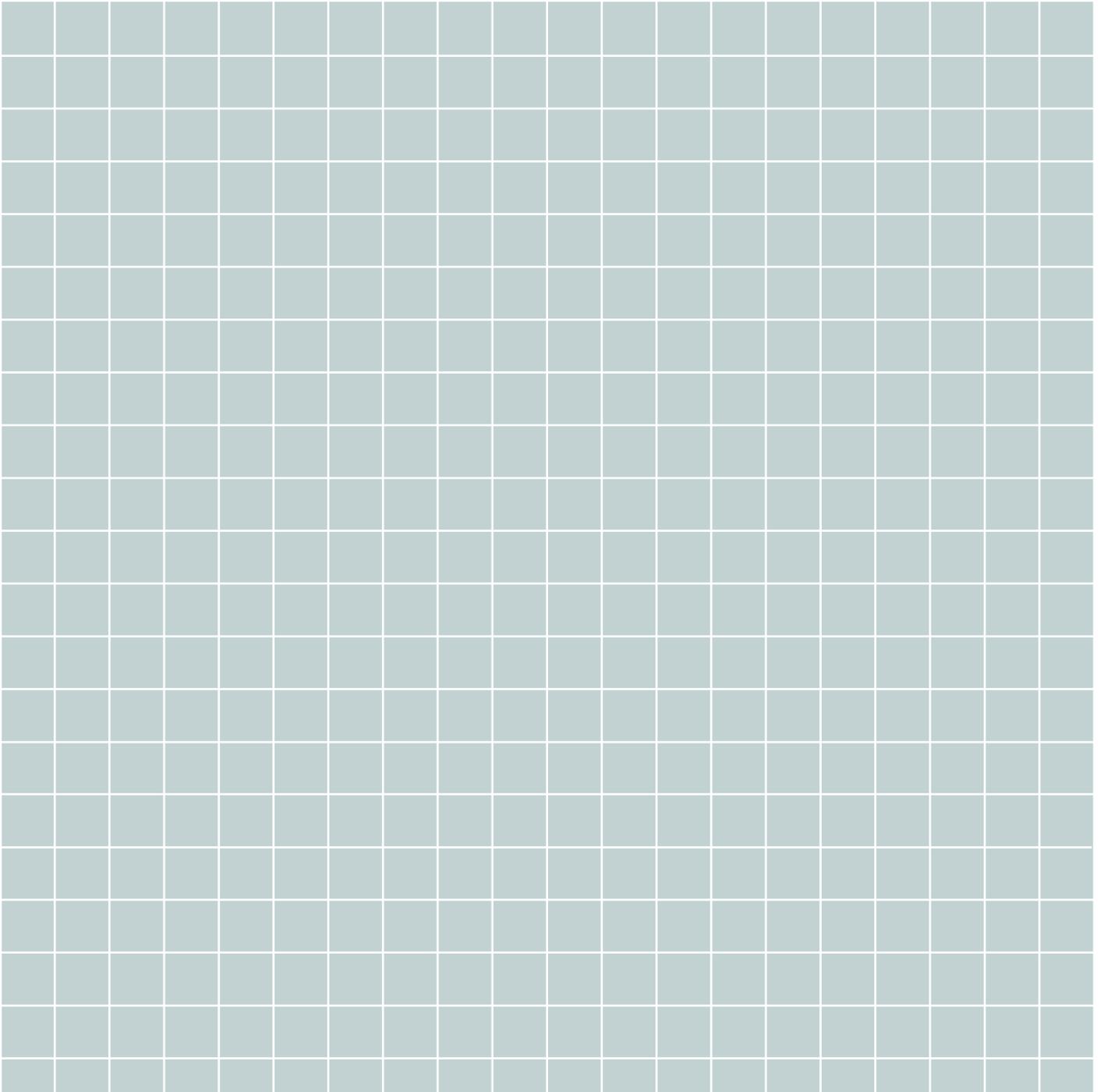
**-Fig62:**Vertical garden diy, Hanging plants, Vertical garden design. (n.d.). Pinterest. Retrieved November 2021, from <https://www.pinterest.com/pin/738520038868896290/>.

**-Fig63:**Recycled Tire Projects: Tire garden, Gardening for kids, School garden. (n.d.). Pinterest. Retrieved November 2021, from <https://www.pinterest.com/pin/751256781565752404/>.

**-Fig64:**30 Verschiedene Ideen für Vorgartenzäune: Maschendrahtzaun, Pflanzen, Kinderbasteleien. (n.d.). Pinterest. Retrieved November 2021, from <https://www.pinterest.cl/pin/569212840405885272/>.

**-Fig65:**What Are Our Favourite Loose Parts? (1970). What Are Our Favourite Loose Parts? Retrieved November 2021, from <http://stompinginthemud.blogspot.com/2013/04/what-are-our-favorite-loose-parts.html>.

**-Fig66:**(n.d.). 14 Mind-Blowing Outdoor Art Spaces You Can Set Up Today. Retrieved November 2021, from <https://tinybeans.com/inspiring-outdoor-art-studios/amp/>.



# ATTACHMENTS



## VISIT LETTER AUTORIZZATION

### CASALE MONFERRATO

Alla cortese attenzione  
Del Dirigente Scolastico  
Dell'Istituto Comprensivo Casale 3  
Prof. Claudio Simonetti,  
Delle Referenti del Plesso "Luzzati"  
Signore Arengi Viviana e Raimondi Cristina,  
della Signora Ottone Silvia, Educatrice Professionale  
Del Dott. Savio Lorenzo e della Dott.ssa Daniela Bosia  
Delle tesiste Antonia Ballestreros e Maria Alejandra Sánchez  
Politecnico di Torino

Mitt. Lupano Paola  
paolalupano66@gmail.com  
lupanopaola@docenti-icc3.it

Oggetto: Visita al plesso di Scuola dell'Infanzia "Luzzati" di Casale Monferrato.

Nella mattinata di Venerdì 3 Settembre 2021 alle ore 10.45 ha avuto luogo la visita del plesso delle tesiste del Politecnico di Torino Maria Alejandra Sánchez e Antonia Ballestreros accompagnate dall'insegnante Paola Lupano. Le studentesse in questi giorni hanno provveduto a richiedere all'Ufficio Tecnico del Comune di Casale planimetrie e dati tecnici relativi alla Scuola dell'Infanzia "Luzzati".

La finalità di questo sopralluogo è stata di preparare lo studio dell'edificio che sarà contenuto nella tesi di laurea sulla strutturazione dell'ambiente fisico scuola per garantire l'accesso al gioco e agli apprendimenti in tutti alunni con particolare attenzione ai bambini con autismo.

Spazi e materiali sono strutturati e posizionati così da garantire al bambino la possibilità di organizzarsi il momento del gioco, promuovere l'autonomia personale, sociale e spazio temporale, la capacità di classificazione, la comunicazione vocale e non, lo sviluppo cognitivo e motorio.

Le studentesse hanno seguito la visita corredandola con foto di ciascun locale.

Al termine della visita le studentesse hanno dialogato con le insegnanti del plesso allo scopo di comprendere le possibili criticità dell'edificio, l'eventuale necessità di spazi aggiuntivi (sala per attività psicomotorie, organizzazione

# REQUEST OF PLANS AUTORIZATION

COMUNE DI CASALE MONFERRATO

Comune di Casale Monferrato

PROTOCOLLO Cla: 6.4  
N. 0024021 del 07/09/2021



GUT / UOC:

Torino, 2021

Illustrissimo signor Sindaco del Comune Casale Monferrato

Via mameli 10, 15033 Casale Monferrato

Objetto: Richiesta planimetria a scopo di studio per la scuola infanzia Luzzati di Casale Monferrato.

Siamo Antonia Ballesteros nata in Colombia e Maria Alejandra Sanchez nata in Venezuela, studentesse di architettura del Politecnico di Torino, stiamo sviluppando la nostra tesi, che riguarda la progettazione di requisiti spaziali che aiutino a migliorare le esperienze dei bambini a scuola, soprattutto per i bambini con disturbo dello spettro autistico.

Nella presente vorremmo chiederle la planimetria di la scuola d'infanzia Luzzati di Casale perché è uno dei nostri casi di studio, e un punto importante per poter sviluppare la nostra tesi.

Grazie mille,

Antonia Ballesteros

Maria Alejandra Sanchez

CASALE 07.09.2021

Visto, si AUTORIZZO

